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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

EX PARTE

William F. Caton
Acting Secretary
Federal Communications Commission
Mail Stop 1170
1919 M Street, N.W. , Room 222
Washington, D.C. 20554

Dear Mr. Caton:

Re: CC Docket No. 96-45, Universal Service

We are enclosing an executive overview of Pacific's Cost Proxy Model, a detailed description of proxy cost modeling under Pacific's proposal, and a user manual for the Cost Proxy Model. Please associate these with the above-referenced docket.

We are submitting two copies of this notice in accordance with Section 1.1206(a)(1) of the Commission's rules. Please stamp and return the provided copy to confirm your receipt. Please contact me should you have any questions.

Sincerely,

cc: J. Atkinson
R. Mohammed
J. Reel
G. Rosston
G. Seigel

No. of Copies rec'd 0+1
List ABCDE

COST PROXY MODEL:

UNIVERSAL SERVICE EDITION

Executive Overview

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For Further Information

or

Cost Proxy Model Support

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Executive Overview

Purpose of the Cost Proxy Model (CPM)

Announcements of telecommunication company restructuring, partnering, merging, acquisition and billion-dollar investments occur every week. Regulators and policy makers are in the process of changing the rules and functionality of the telecommunications marketplace. Long-term success for the companies, the marketplace, the state, and the nation depends on the informed, timely decisions made by managers, regulators and policy makers.

One component of this impending change is Universal Service funding. The ability to understand and make explicit the cost of Universal Service is crucial as telecommunication companies approach this critical junction in time. The secure world of highly regulated marketplaces has given way to the uncertainty of competition. As competition becomes commonplace and regulation changes to allow greater marketplace flexibility, the current structure of funding Universal Service through a complex set of implicit cross subsidies is rapidly becoming obsolete. A new paradigm is needed to successfully fund Universal Service in the competitive environment. This new paradigm is compelled by the passage of the Telecommunications Act of 1996.

Telecommunication companies cannot continue to rely on pricing structures developed for a regulated, cost reimbursement environment. Prices must be market derived and set to minimize inefficient cross-subsidization of formerly residually priced services. Realizing this, various commissions across the country are trying to develop a new paradigm so that Universal Service be properly maintained.

Given this, Pacific Bell and INDETEC International have co-developed the **Cost Proxy Model (CPM)** to help prepare companies for the competitive marketplace by improving the quality and quantity of information available to make and support decisions. By integrating sound financial, engineering, economic and managerial accounting principles, **CPM** provides the costs, revenues, and the residual Universal Service supports, which is defined as ***the provisioning of affordable telephone service to all customers.*** The **CPM** was first implemented in California where ***Universal Service*** was defined to include the following:

- access to single-party residential local exchange service;
- access to interexchange carriers;
- ability to place and receive calls;
- touch-tone dialing;
- free access to emergency services, 911/E911;
- access to directory assistance;
- lifeline rate for eligible customers;
- customer choice of flat or measured rate service;
- access to directory listing;
- access to operator services;
- voice grade connection to public switched telephone network;

- access to information services and 800 services;
- one-time free blocking for information services and one-time billing adjustments for charges incurred inadvertently, mistakenly, or that were unauthorized;
- access to telephone relay service as provided for in PU Code 2881;
- access to public policy pay telephone; and,
- free access to customer service for information about ULTS, service activation, service termination, service repair and bill inquiries.

Thew **CPM** is flexible and can accommodate alternative lists of elements to be included in the definition of ***Universal Service***.

In this respect, **CPM** is an important regulatory tool that helps companies and regulators understand the cost of providing Universal Service. Although this information has a broad range of strategic and competitive application, CPM currently has been limited in its scope of application to only analyze universal service. Each installation copy of **CPM** includes a detailed **User Manual** that explains the appropriate applications of the model as well as when and how to use them. In addition the ***CPM User Manual*** includes a wealth of detail about the individual data requirements, design, methodology and operation of the model itself.

CPM Methodology

The essence of the concept and methodology of **CPM** is to aggregate the diverse costs of serving customers in different locations under different circumstances while retaining adherence to standard economic and engineering principles. Obviously it is not practical to examine every component of every subscriber's phone connection and determine a precise cost for each. What **CPM** attempts to do is develop a set of assumptions, calculations and algorithms to approximate the actual costs of providing service in an ***economically sound manner while incorporating current and expected engineering practices.*** To do this properly requires credible and verifiable inputs. Listings of those inputs and assumptions may be found in Chapter 2 of the ***CPM User Manual*** and in its appendices. Some of the more important methodological approaches that the **CPM** incorporates include:

- A "bottoms-up" approach to cost by separating costs of providing service into their smallest, most granular level of detail. This approach provides a solid base for cost projection.
- Costs are expressed in meaningful metrics such as cost per foot of aerial copper or cost per switched minute of use.
- Customer and geographic data requirements can be met through company proprietary data ***or*** via a number of commercially available governmental and private data providers.
- Utilizing a "grid" approach to geographic data conversion allows **CPM** to summarize costs in a number of related ways, such as:
    - By Central Office;
    - By Zip Code;

- By Census Block Group;
- By political entities.

Model Platform and Data Requirements

The Cost Proxy Model is designed using SAS® software and Microsoft® Excel. It runs best on a Pentium-based machine using Microsoft® Windows NT or Windows®95. It is based on a modular design using a table-driven database structure. Ongoing maintenance is minimal. The user only verifies that tables are up-to-date and that current raw customer data has been obtained.

The Cost Proxy Model is heavily dependent on user input. The user input consists of redefined data tables. The following highlights specific tables that may be populated mechanically via a "CSV" (Comma Separated Value) file. For a description of each type of data and a detailed listing of the layout of each table, refer to Chapter 3 and Appendix E of ***the CPM User Manual***.

Geographic Data

- **Household file at Grid level. (CENSUS.CSV)**
- **Daytime population file at Grid level. (DAYPOP.CSV)**
- **State Census Block Group (CBG) file. (ST_CBG.CSV)**
- **State Grid file (ST_GRID.CSV)**
- **Terrain file (TERRAIN.CSV)**

Customer/Lookup Data

- **Usage Values file (USAGE.CSV)**
- **Wire Center file (WC.CSV)**
- **Operating Exp. Ratios file (OPX_RTO.CSV)**
- **Feeder Route/Air Ratios file (FDR_RTO.CSV)**
- **Density Type file (DENS_TYP.CSV)**
- **Distance Type file (DIS_TYP.CSV)**
- **Engineering Rules file (ENG_RUL.CSV)**
- **Feeder % W/O SAI file (MIS_SAI.CSV)**
- **Surface Classifications file (SURF.CSV)**
- **Factors file (FACTORS.CSV)**

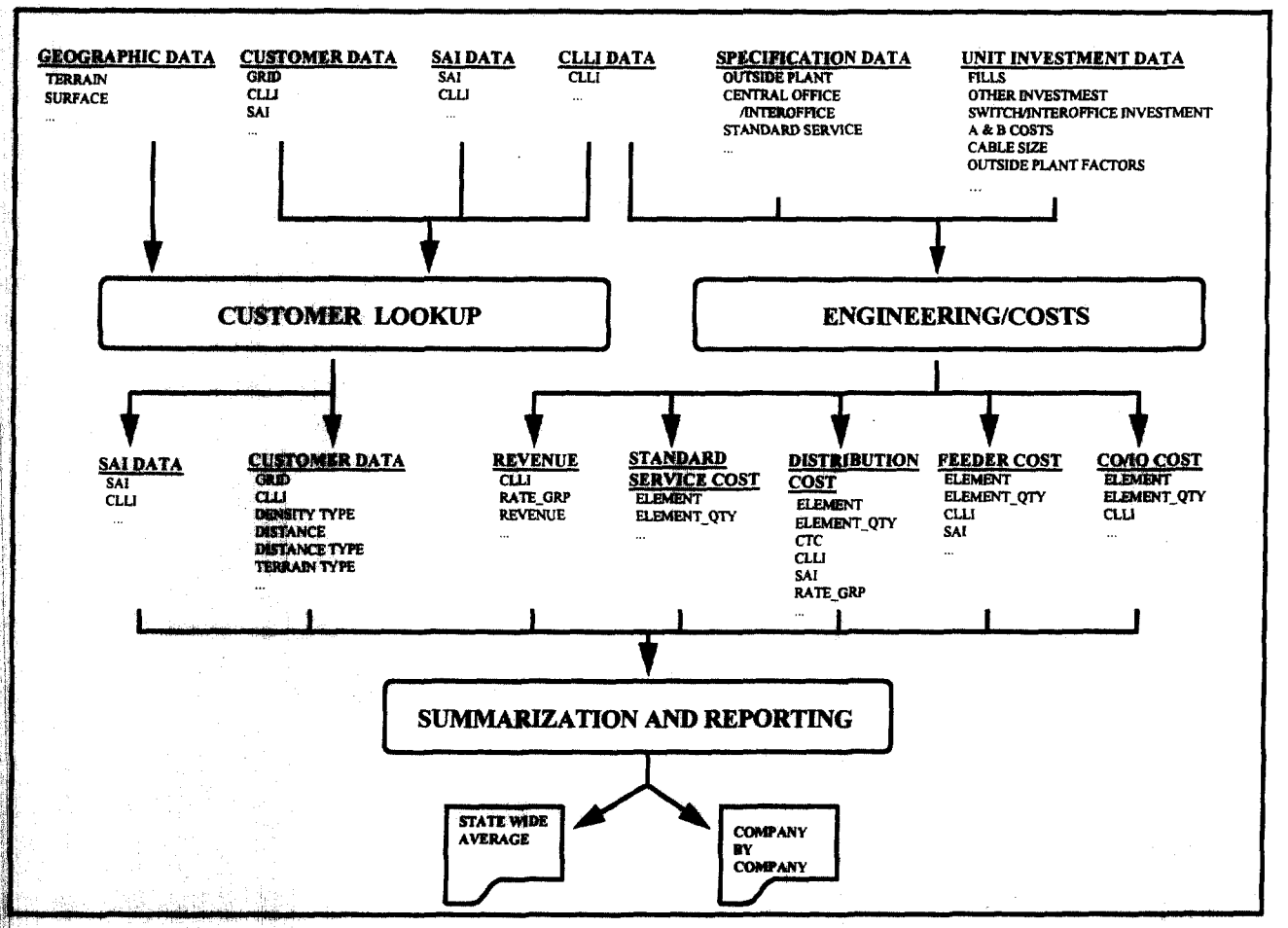
Engineering/Cost Data

- **OSP (Outside Plant Specifications) Spec file (OSP_SPC.CSV)**
- **CO/IO (Central Office/Interoffice) Spec file (SIO_SPC.CSV)**
- **Std Svc (Standard Service) Spec file (STD_SPC.CSV)**
- **A + B Cost file (AB_CST.CSV)**
- **Outside Plt Adj (Plant Adjustment) file (OSP_FCT.CSV)**
- **Annual Chg Fctr (Charge Factor) file (ACF.CSV)**

- **Operating Exp (Expense) file (OTH_EXP.CSV)**
- **Cable Size file (CBL_SIZ.CSV)**
- **Other Inv (Investment) file (OTH_INV.CSV)**
- **Fill Level file (FILLS.CSV)**
- **Switch / IO (Interoffice) file (SIO_INV.CSV)**

The diagram on the following page provides a high level overview of how **CPM** is designed and the flow of information.

Basic System Design



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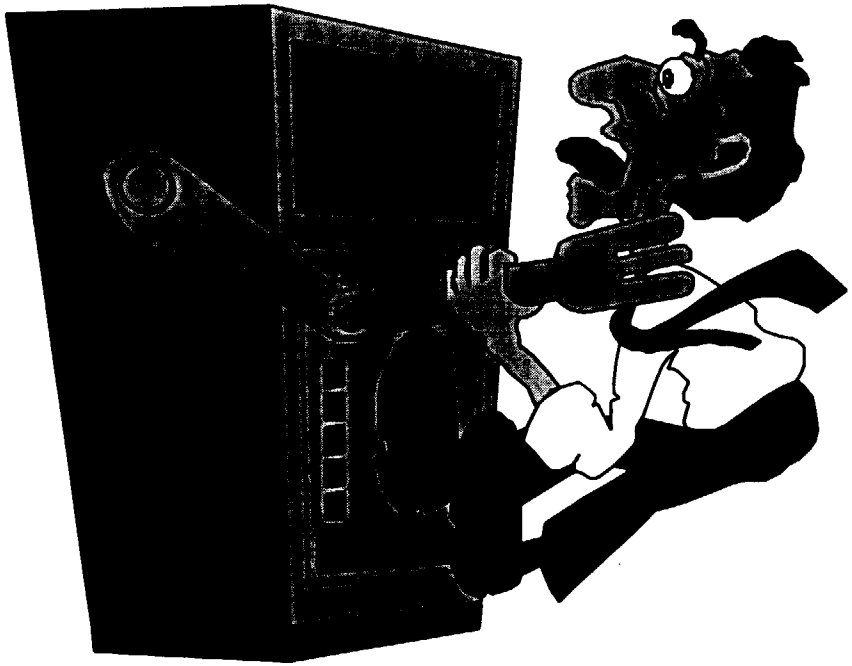
PROXY COST MODELING



W. L. VOWELL
FEBRUARY 2, 1996

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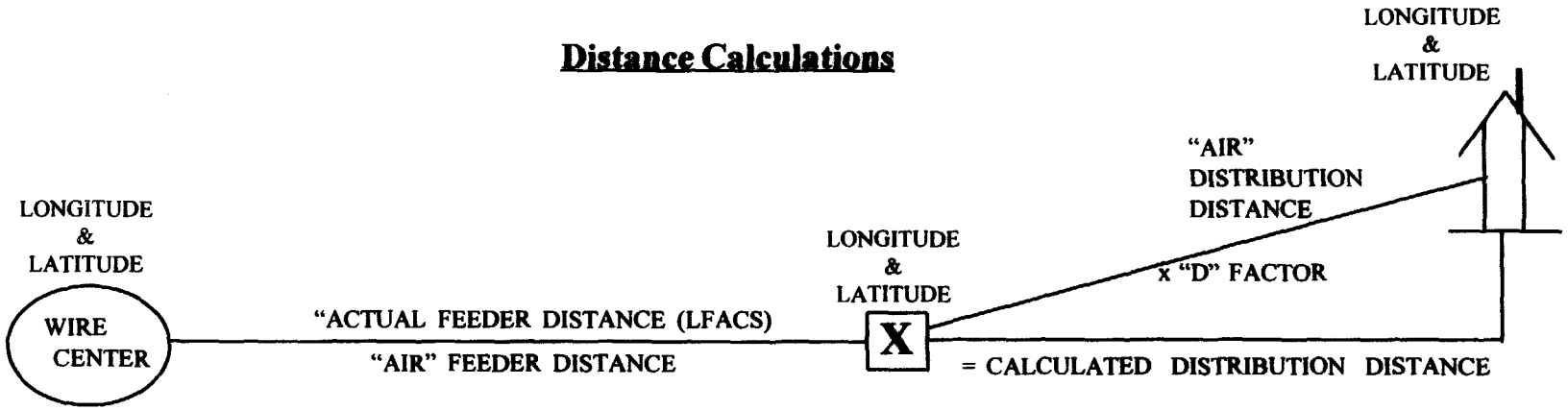
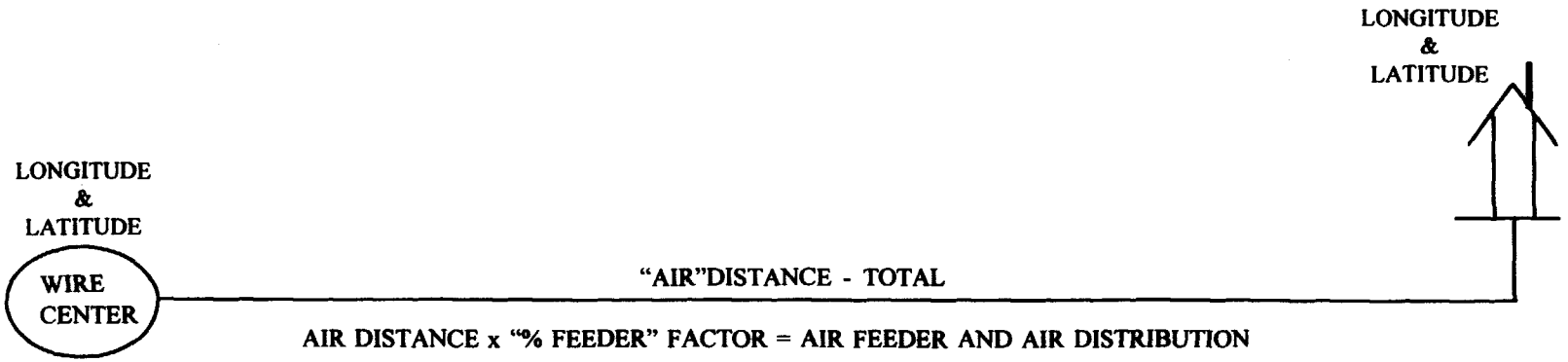
Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

Distance Calculations



(1) DEVELOP "F" FACTOR FROM ABOVE FEEDER DISTANCES (ACTUAL/AIR)
(2) "D" FACTOR DEVELOPED BY SAMPLE OF "ACTUAL" DISTRIBUTION DISTANCES (ACTUAL/AIR)



AIR DISTANCE x "% FEEDER" FACTOR = AIR FEEDER AND AIR DISTRIBUTION

AIR FEEDER x "F" FACTOR = FEEDER DISTANCE

AIR DISTRIBUTION x "D" FACTOR = DISTRIBUTION DISTANCE

(1) "% FEEDER" FACTOR DEVELOPED BY SAMPLE OF ACTUAL MEASURE OF FEEDER AND DISTRIBUTION

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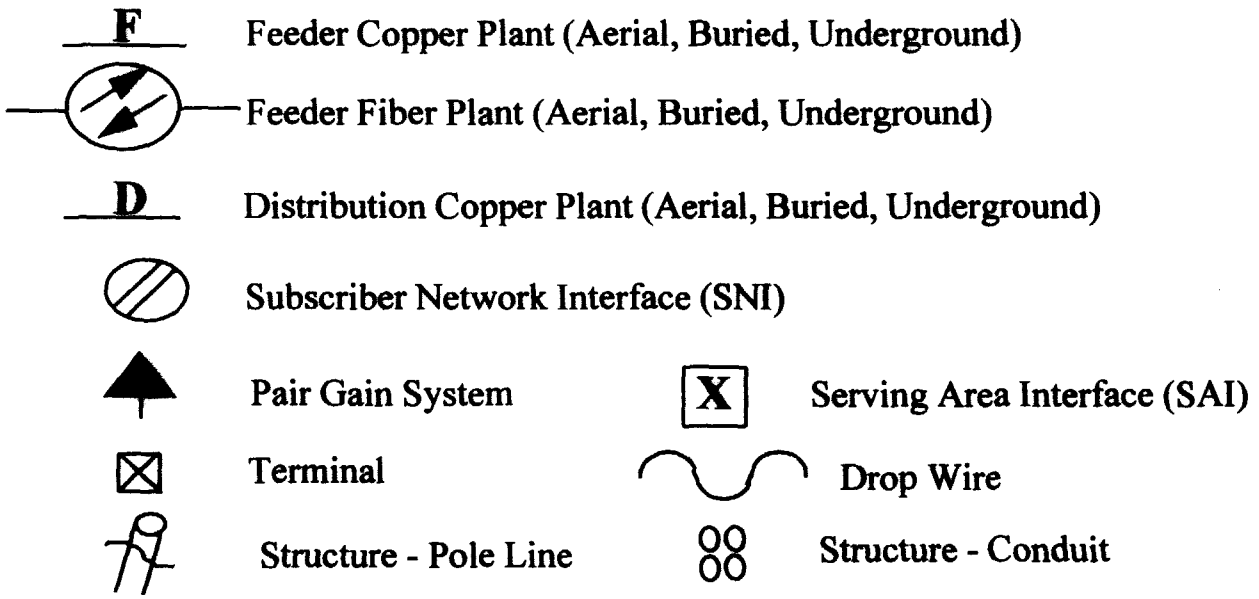
Pacific Bell Cost Proxy Model
Loop Assumptions and Calculations

Components and Definitions



For purposes of the Cost Proxy Model the following definitions apply:

- Density: Access Lines per square mile
- Feeder: Plant from the Wire Center to the SAI
- Distribution: Plant from the SAI to the customer
- Modifying Factor: Factors developed to adjust investment for the affects of Terrain as well as density

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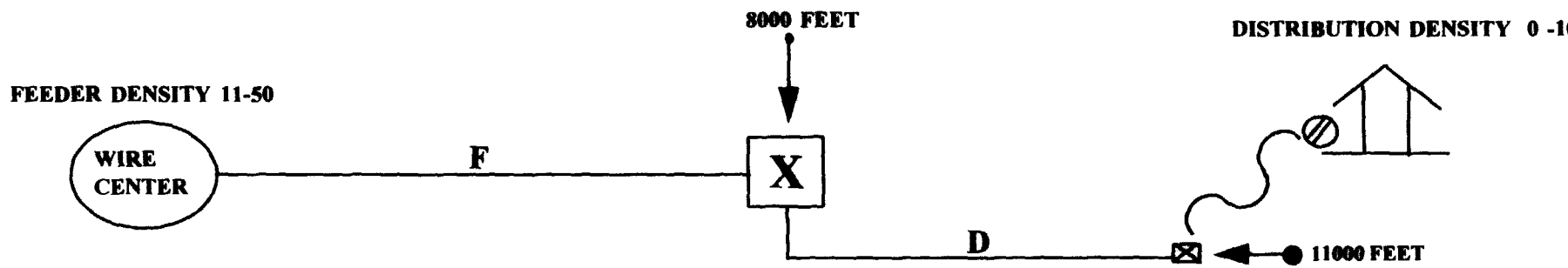
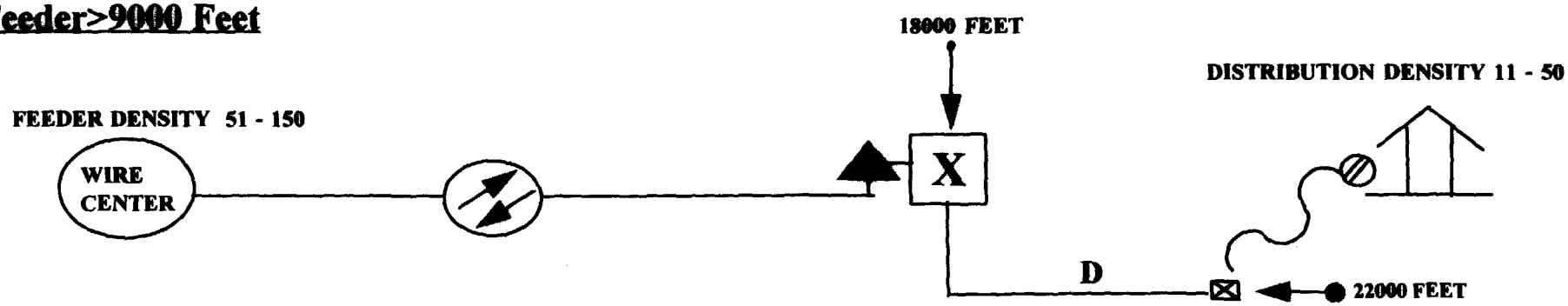
Pacific Bell Cost Proxy Model
Loop Assumptions and Calculations

EXAMPLES

Feeder< 9000 Feet



Feeder>9000 Feet



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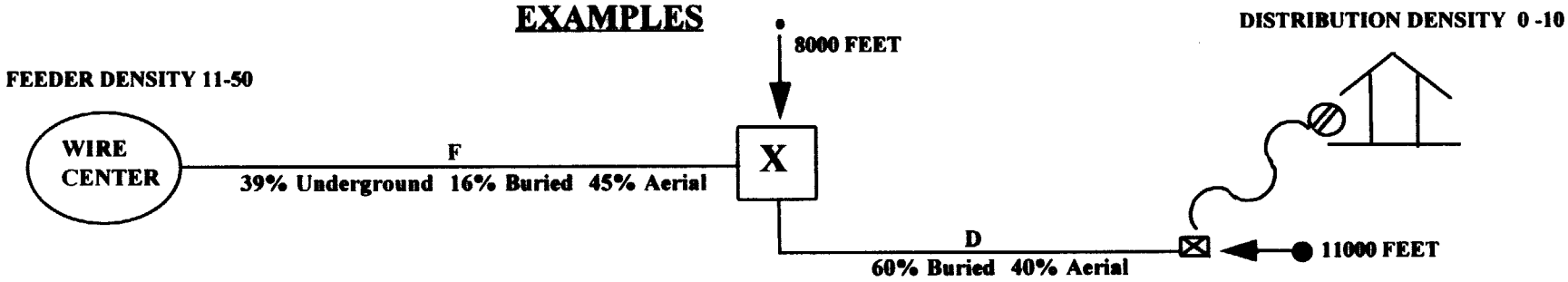
Pacific Bell Cost Proxy Model

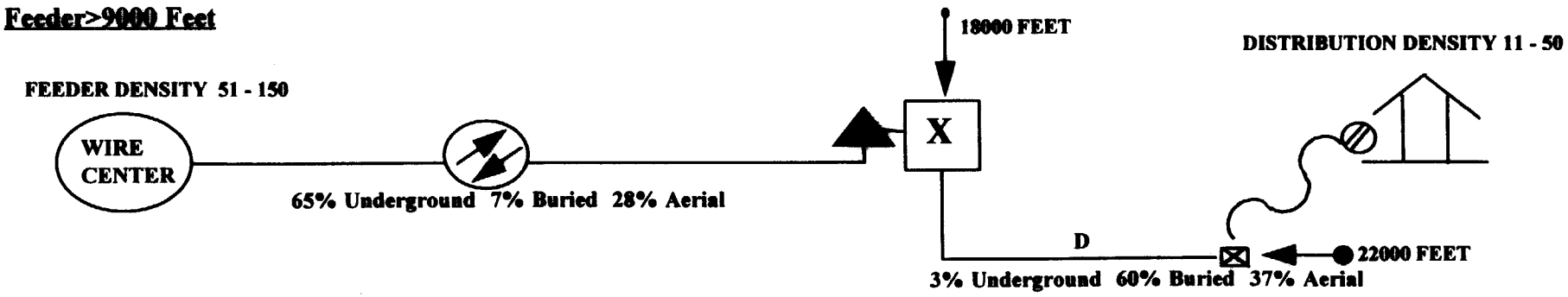
Loop Assumptions and Calculations

Feeder< 9000 Feet

EXAMPLES



Feeder>9000 Feet



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Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

			FEEDER AND DISTRIBUTION CABLES						
			% MIX BY DENSITY ZONES						
	COPPER FEEDER <[illegible]'			FIBER FEEDER >[illegible]'			COPPER DISTRIBUTION		
DENSITY	UG	BURIED	AERIAL	UG	BURIED	AERIAL	UG	BURIED	AERIAL
0-10	24%	27%	49%	24%	27%	49%	0%	60%	40%
11-50	39%	16%	45%	39%	16%	45%	3%	60%	37%
51-150	65%	7%	28%	65%	7%	28%	5%	65%	30%
151-500	80%	2%	18%	80%	2%	18%	5%	65%	30%
501-2000	93%	1%	6%	93%	1%	6%	15%	70%	15%
2001-5000	96%	0.5%	3.5%	96%	0.5%	3.5%	20%	75%	5%
5001+	98.5%	0.5%	1%	98.5%	0.5%	1%	88%	10%	2%

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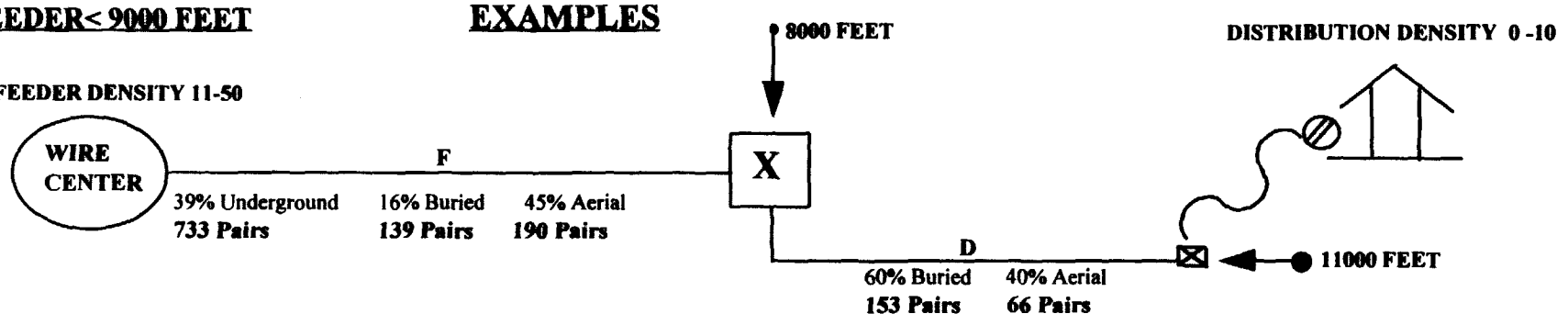
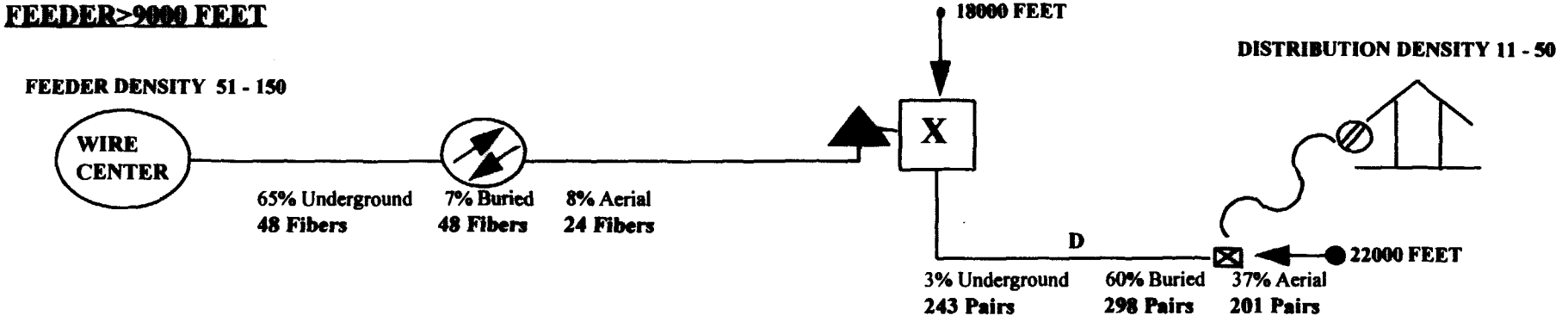
Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

FEEDER< 9000 FEET **EXAMPLES**



FEEDER>9000 FEET



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Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

			FEEDER AND DISTRIBUTION CABLES						
			AVERAGE CABLE SIZES BY DENSITY ZONES						
	COPPER FEEDER <[illegible]'			FIBER FEEDER >[illegible]'			COPPER DISTRIBUTION		
DENSITY	UG	BURIED	AERIAL	UG	BURIED	AERIAL	UG	BURIED	AERIAL
0-10	671	102	108	48	48	24	323	153	66
11-50	733	139	190	48	48	24	243	298	201
51-150	1046	333	357	48	48	24	316	256	228
151-500	1466	377	477	48	48	24	532	284	344
501-2000	1824	603	696	48	48	24	534	261	377
2001-5000	2203	1080	1055	48	48	24	557	309	410
5001+	2443	1175	932	48	48	24	596	371	414

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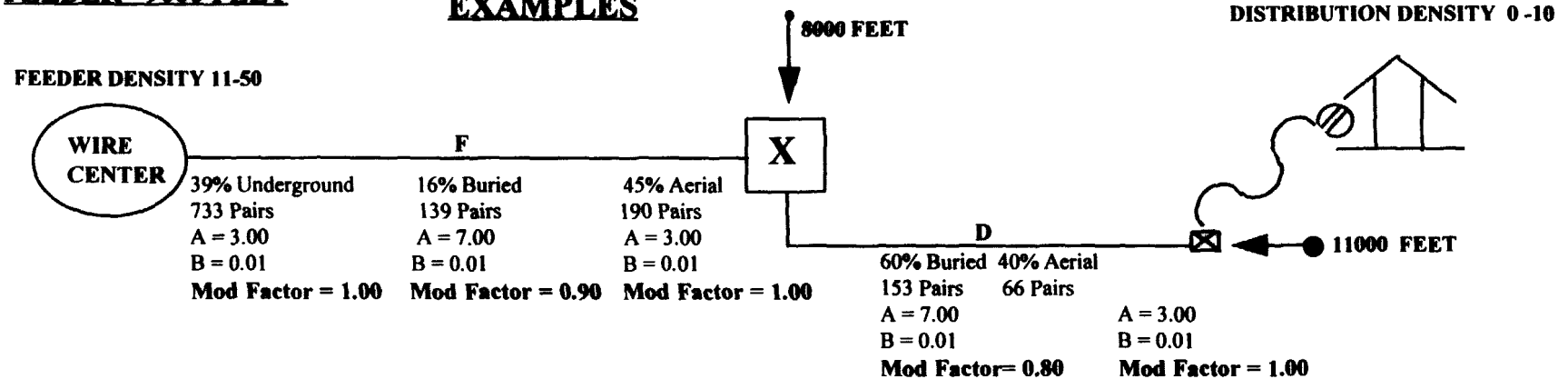
Pacific Bell Cost Proxy Model

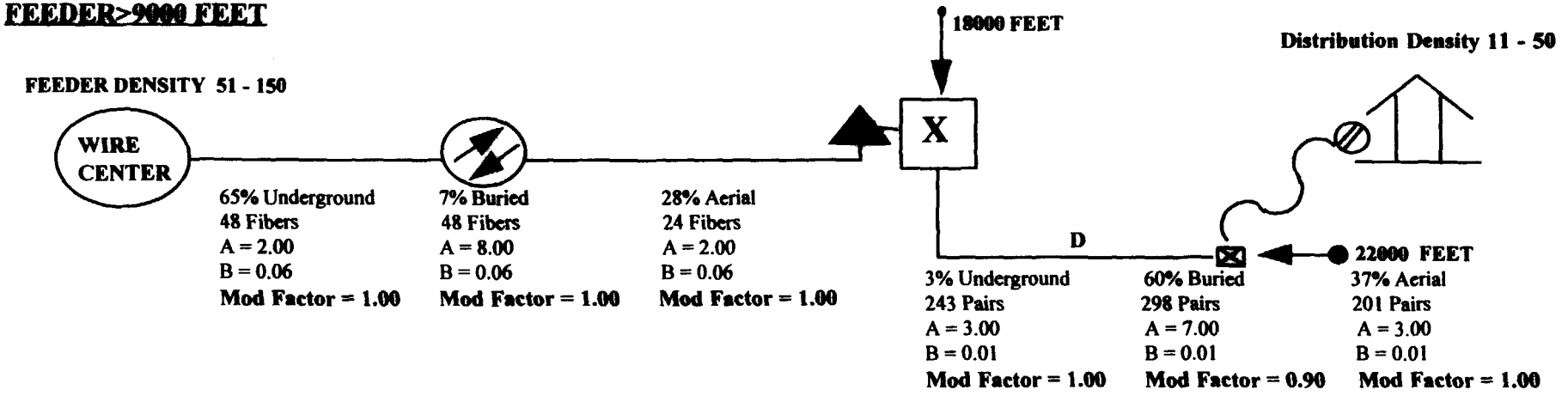
Loop Assumptions and Calculations

FEEDER< 9000 FEET

EXAMPLES



FEEDER>9000 FEET



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Pacific Bell Cost Proxy Model
Loop Assumptions and Calculations

DUMMY COST FILE

TYPE OF CABLE	FRC	$ / SHEATH-FOOT	$ / PAIR-FOOT
Copper Underground Cable	5C	3.00	0.0100
Copper Buried Cable	4 5C	7.00	0.0100
Copper Aerial Cable	12C	3.00	0.0100
Fiber Underground Cable	85C	2.00	0.0600
Fiber Buried Cable	845C	8.00	0.0600
Fiber Aerial Cable	812C	2.00	0.0600

DOES NOT REPRESENT PACIFIC BELL COSTS

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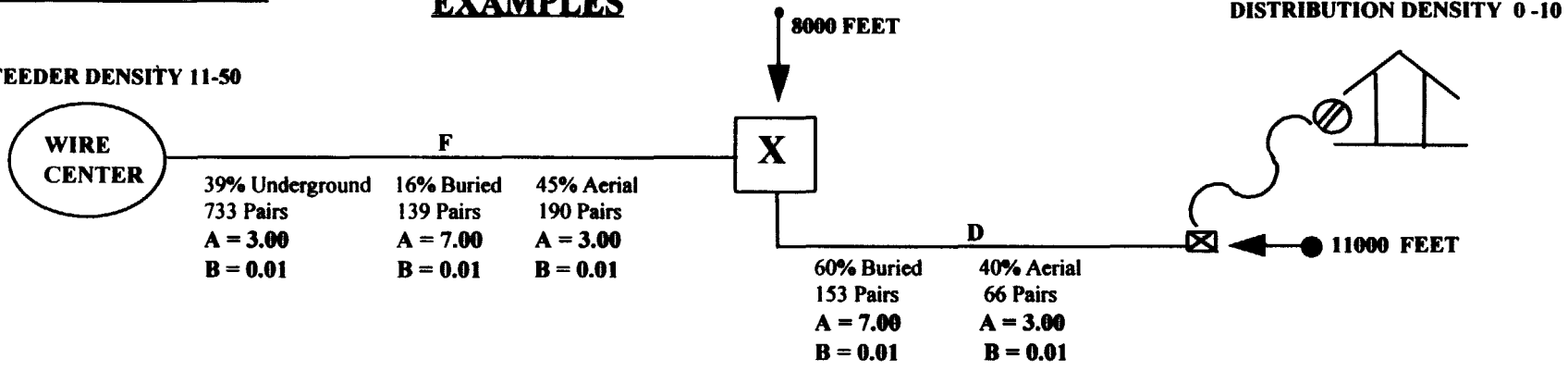
Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

FEEDER< 9000 FEET

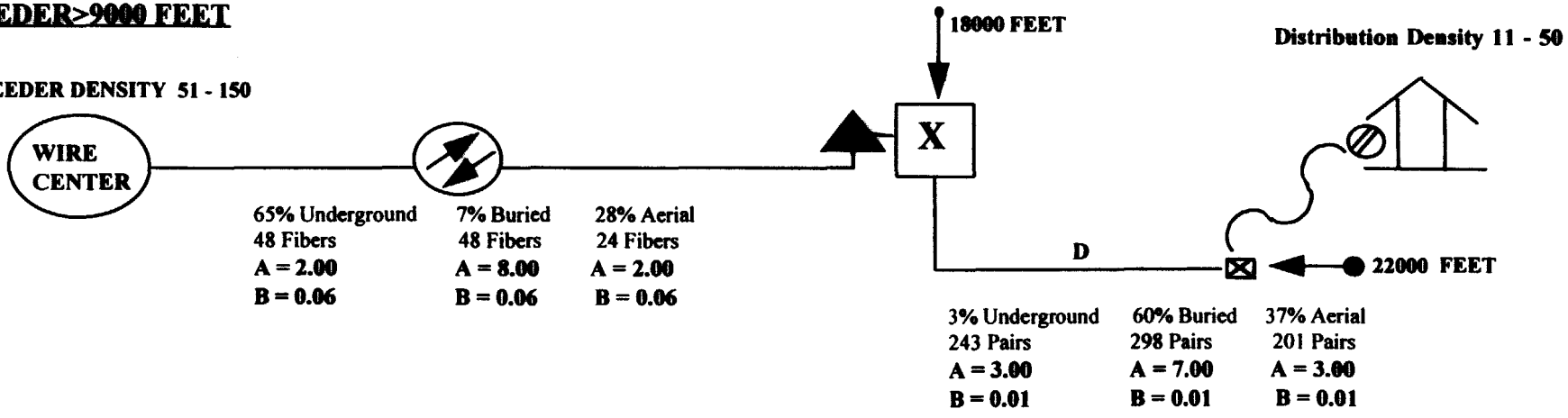
EXAMPLES

FEEDER DENSITY 11-50



FEEDER>9000 FEET

FEEDER DENSITY 51 - 150



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Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

		MODIFYING FACTORS				
UG COPPER AND FIBER (FEEDER AND DISTRIBUTION)						
		FRCs 5C AND 85C				
					ALL	
	DENSITY				TERRAINS	
	0-10				1.00	
	11-50				1.00	
	51-150				1.00	
	151-500				1.00	
	501-2000				1.10	
	2001-5000				1.20	
	5001+				1.40	

		MODIFYING FACTORS				
AERIAL COPPER AND FIBER (FEEDER AND DISTRIBUTION)						
		FRCs 12C AND 812C				
					ALL	
	DENSITY				TERRAIN	
	0-10				1.00	
	11-50				1.00	
	51-150				1.00	
	151-500				1.00	
	501-2000				1.10	
	2001-5000				1.20	
	5001+				1.40	

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Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

			MODIFYING FACTORS					
	BURIED COPPER AND FIBER (FEEDER AND DISTRIBUTION)							
			FRCs 46C AND 846C					
				MED-DIF		HIGH-DIF		
DENSITY		NORMAL		(ROCKS)		(ROCKH)		WATER
0-10		0.80		1.17		1.50		1.50
11-50		0.90		1.26		1.51		1.51
51-150		1.00		1.24		1.45		1.45
151-500		1.00		1.27		1.55		1.55
501-2000		1.00		1.34		1.67		1.67
2001-5000		1.10		1.38		1.68		1.68
5001+		1.20		1.56		1.98		1.98

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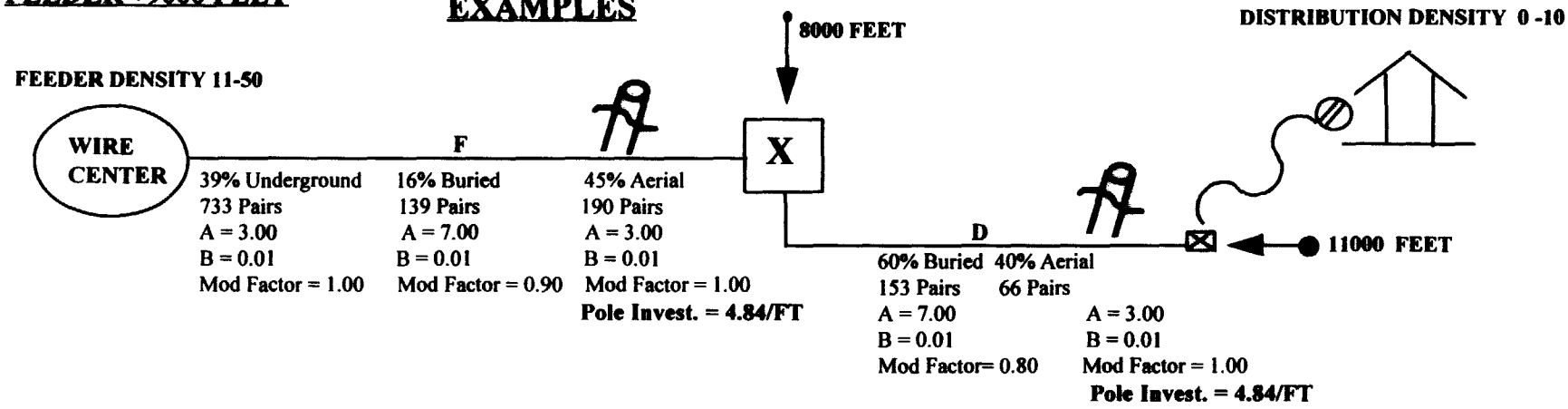
Pacific Bell Cost Proxy Model

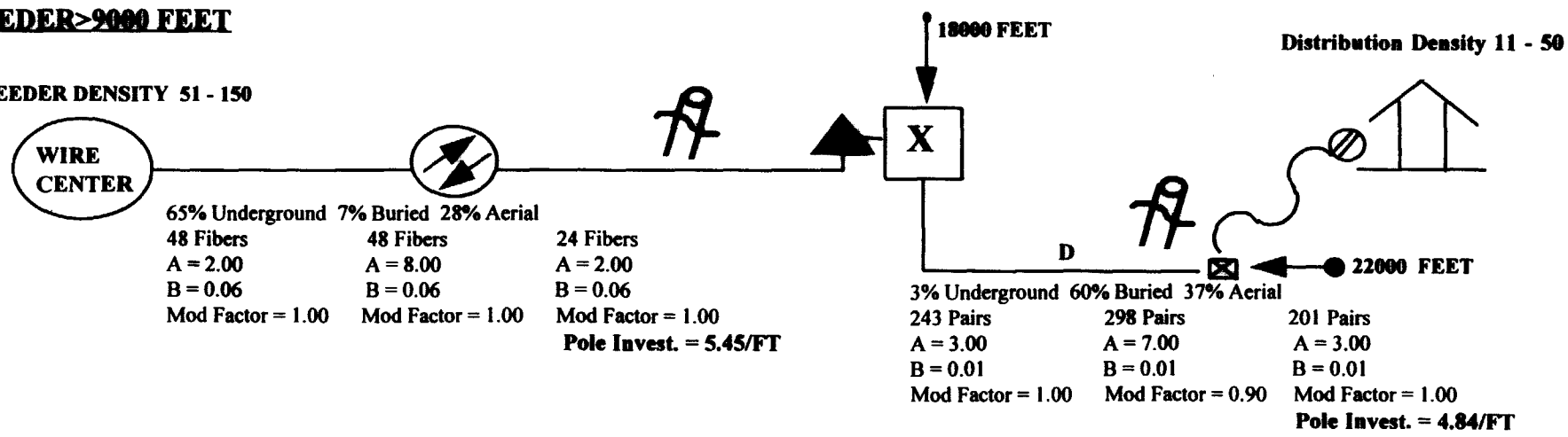
Loop Assumptions and Calculations

FEEDER< 9000 FEET

EXAMPLES



FEEDER>9000 FEET



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Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

		POLE LINE ($ PER LINEAR FOOT) - FRC 1C						
				MED-DIF		HIGH-DIF		
DENSITY		NORMAL		(ROCKS)		(ROCKH)		WATER
0-10		4.84		4.96		5.69		4.96
11-50		4.84		4.96		5.69		4.96
51-150		5.45		5.69		6.42		5.69
151-500		5.45		5.69		6.42		5.69
501-2000		4.02		4.02		4.02		4.02
2001-5000		4.02		4.02		4.02		4.02
5001+		4.02		4.02		4.02		4.02

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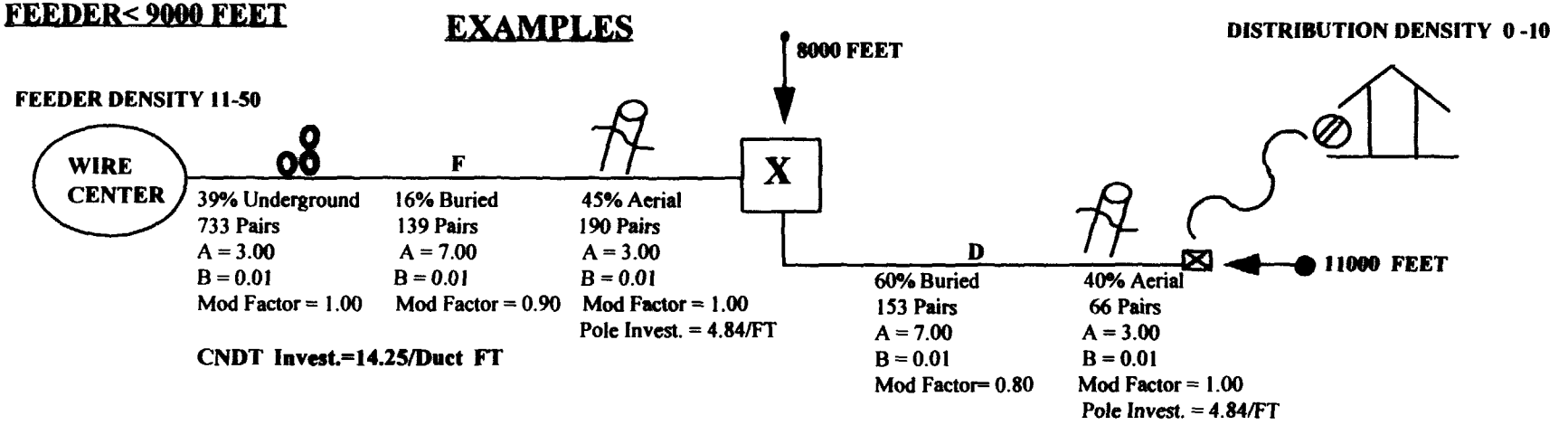
Pacific Bell Cost Proxy Model

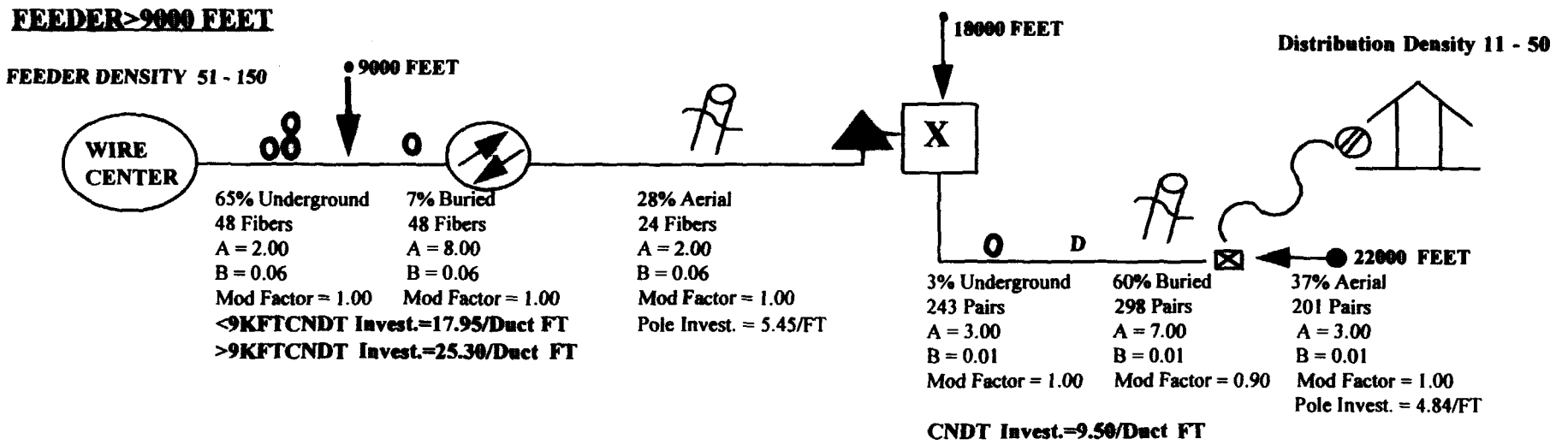
Loop Assumptions and Calculations

FEEDER< 9000 FEET

EXAMPLES



FEEDER>9000 FEET



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Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

		CONDUIT ($ PER DUCT-FOOT) - FRC 4C						
			FOR 0.0 KFT TO 9.0 KFT					
				MED-DIF		HIGH-DIF		
DENSITY		NORMAL		(ROCK-S)		(ROCK-H)		WATER
0-10		12.25		17.20		22.70		22.70
11-50		14.25		20.25		25.05		25.05
51-150		17.95		24.48		30.28		30.28
151-500		18.45		25.96		33.45		33.45
501-2000		13.92		21.15		28.90		28.90
2001-5000		9.80		15.56		21.96		21.96
5001+		7.59		12.59		18.59		18.59