Cost Proxy Model
Sample Calculation: Investment

⇨ Using the Customer File

Record	Lat_c	Long_c	Dens_typ	Terr_typ	Dist_Dist	SAI	CLLI
1	33.055	-116.805	Z1	N	5355	1001	ANHMCA11
2	33.055	-117.005	Z3	M	2300	1110	ANHMCA11

⇨ The Amount of Buried Copper Investment in Distribution for Each "Grid" is

First Record:

Distance	5355
x Percent of Buried (Z1)	60% (OSP Specification File)
x Unit Investment (Z1,N)	.1159
TOTAL	372.39

Second Record:

Distance	2300
x Percent of Buried (Z3)	65% (OSP Specification File)
x Unit Investment (Z3,M)	.1169
TOTAL	174.77

⇨ The Final Step is to Apply the Annual Change Factor to Obtain the Monthly Capital Costs

Cost Proxy Model
Sample Calculation: Operating Expense

⇨ Using the Operating Expense file

Cost Element	Unit of Measure	Operating Expense
ACCT	LINE	0.00427021
ADV_MKT	LINE	0
BILLING	LINE	0.21717087

⇨ The Operating Expenses are Adjusted Based on "ARMIS" Ratios

Company	*Lines*	*Op. Exp. (less Depr.)*	*Ratio*
CALAVERAS	2,446	$ 1,205.90	3.9624
CITIZENS	79,229	$ 433.96	1.4259
CONTEL	356,464	$ 467.98	1.5377
DUCOR	770	$ 1,763.51	5.7947
EVANS	[illegible]	$ [illegible]	[illegible]
GTE-C	3,567,036	$ 369.72	1.2148
PACIFIC	16,943,623	$ 285.75	0.9389
VOLCANO	8,878	$ 851.76	2.7988
WINTERHAVEN	1,398	$ 757.88	2.4903

⇨ To Approximate the Values for a Specific Company

Company	*Element*	*Expense*
Contel	Billing	0.334

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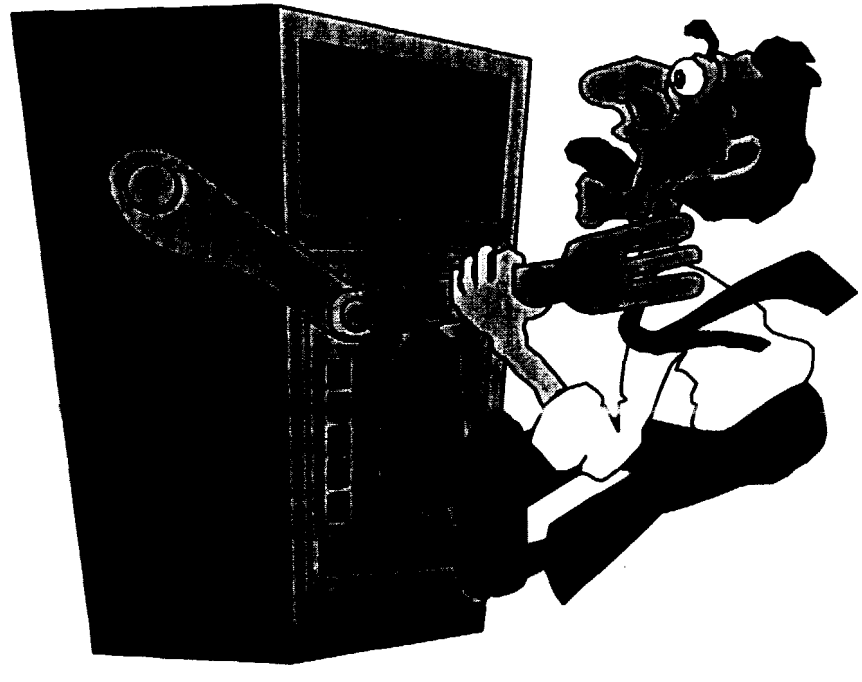
PROXY COST MODELING



W. L. VOWELL
FEBRUARY 2, 1996

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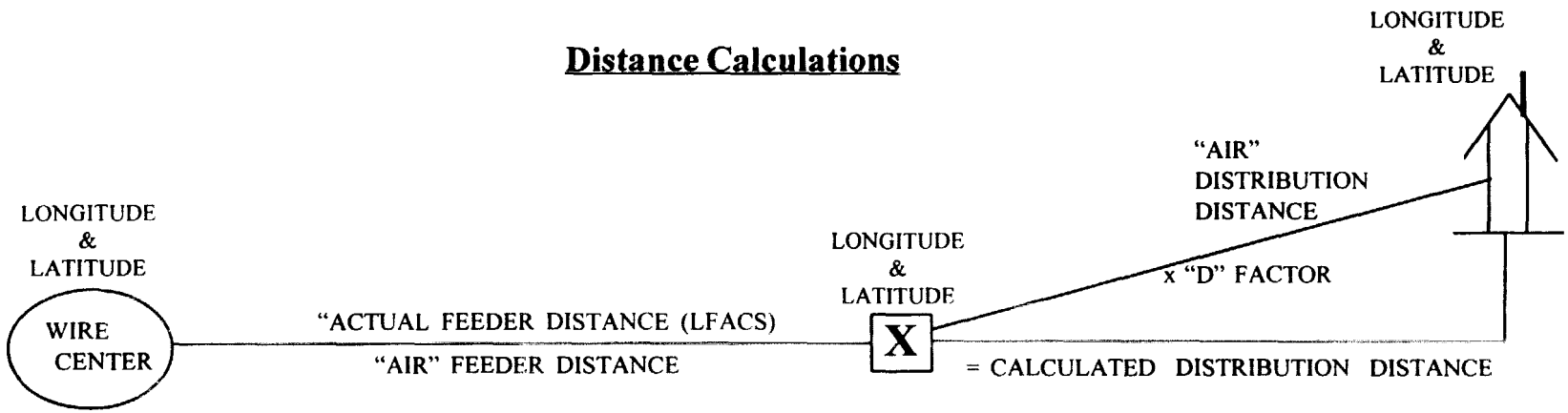
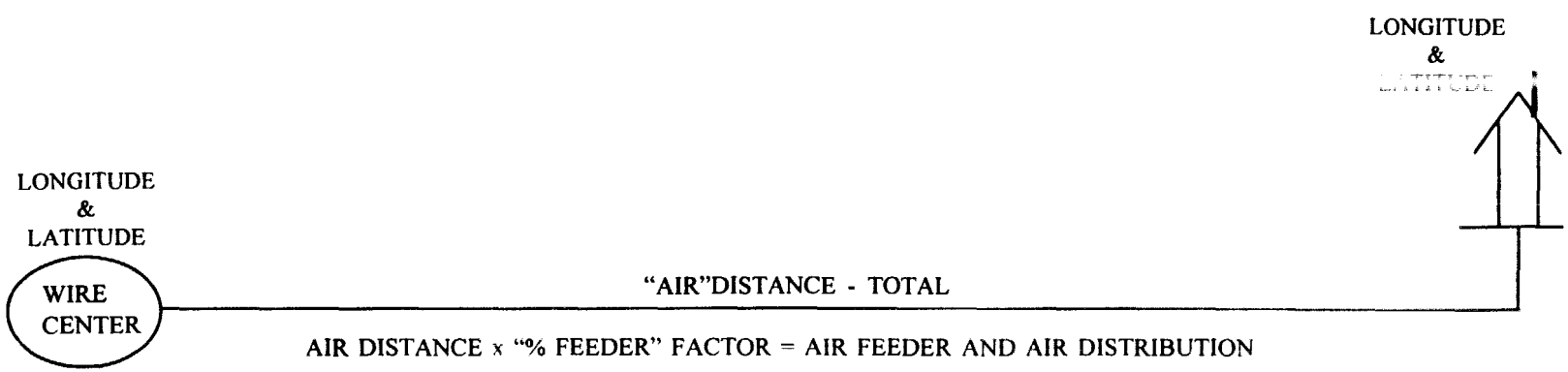
Pacific Bell Cost Proxy Model
Loop Assumptions and Calculations

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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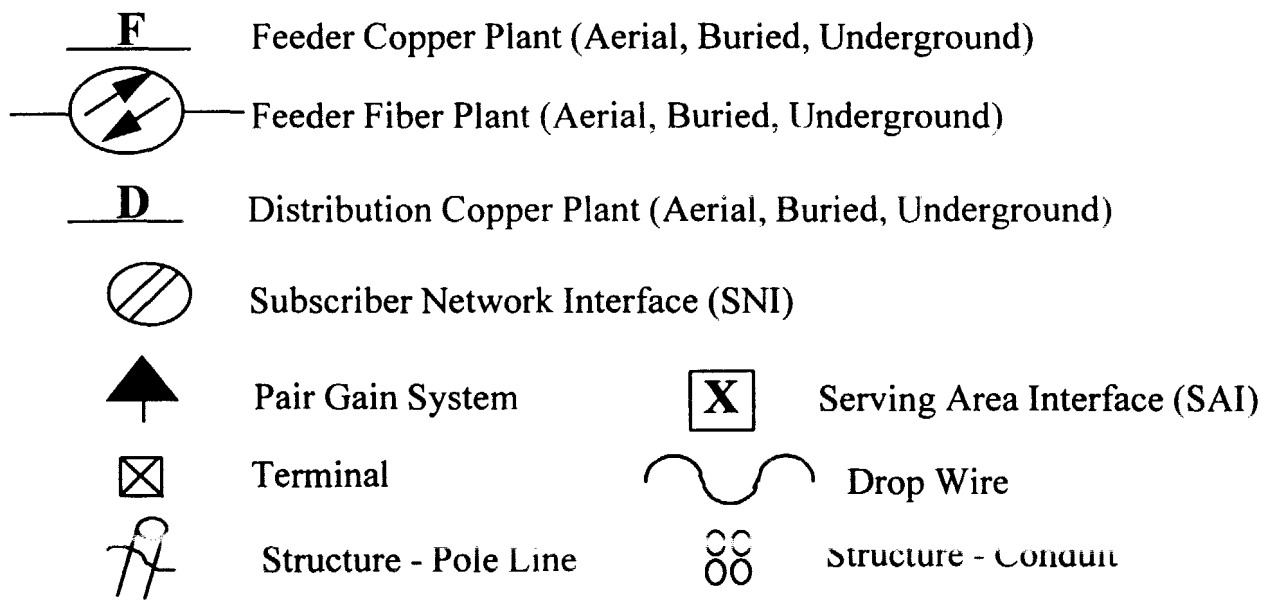
Pacific Bell Cost Proxy Model
Loop Assumptions and Calculations

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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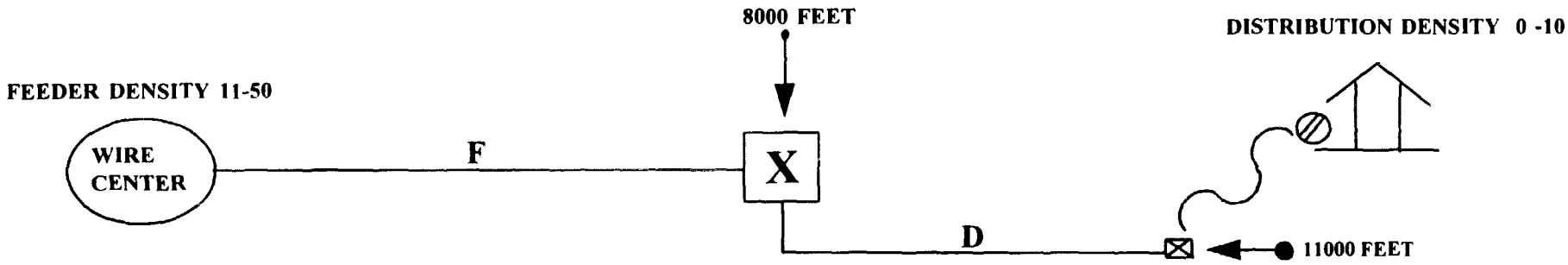
Pacific Bell Cost Proxy Model

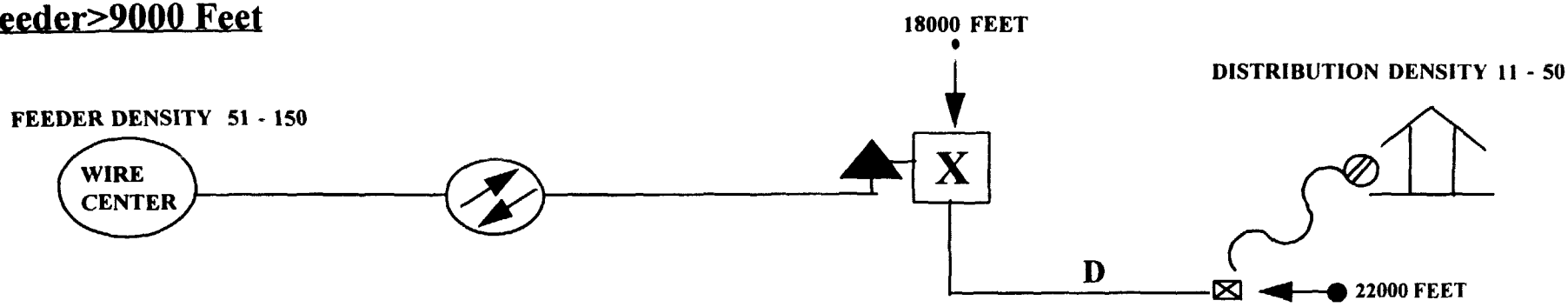
Loop Assumptions and Calculations

EXAMPLES

Feeder< 9000 Feet



Feeder>9000 Feet



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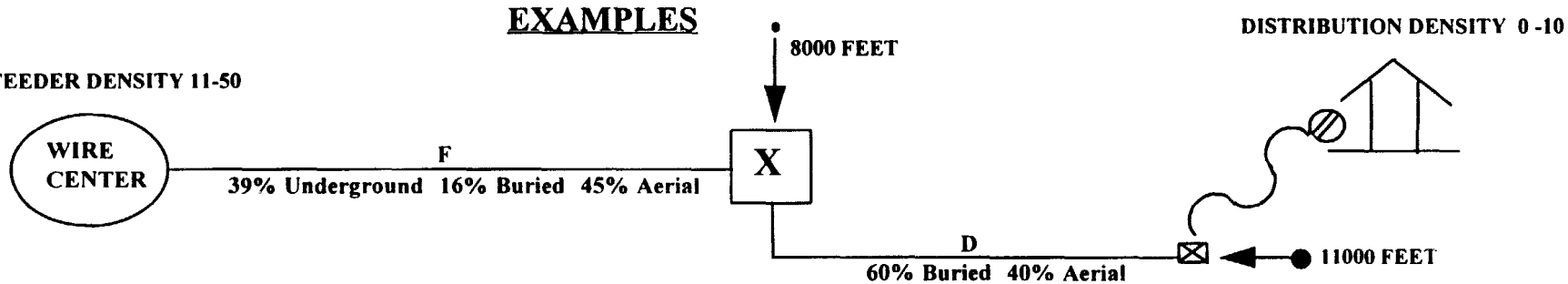
Pacific Bell Cost Proxy Model

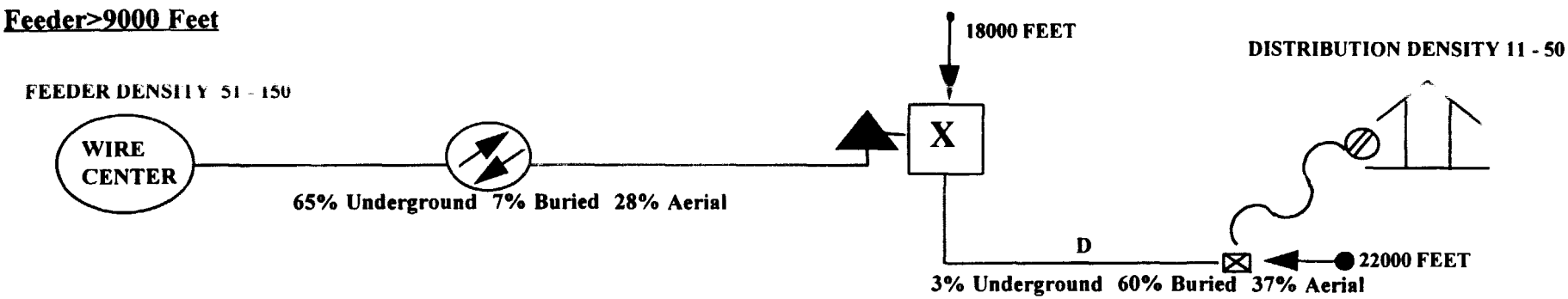
Loop Assumptions and Calculations

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 <9000'			FIBER FEEDER >9000'			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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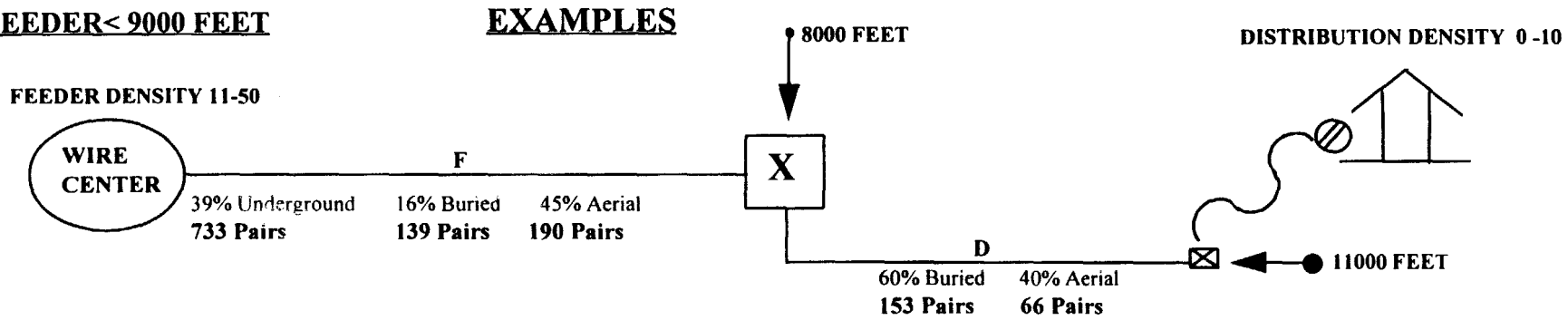
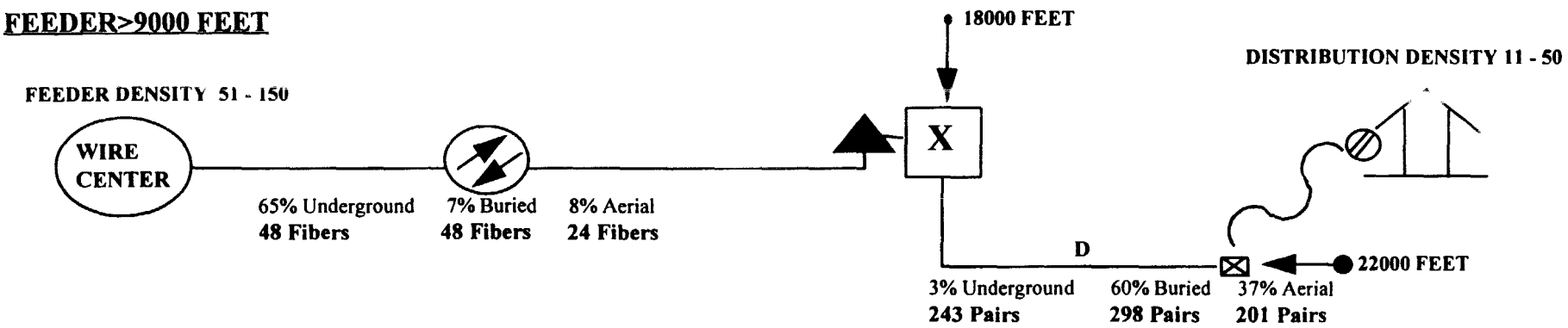
Pacific Bell Cost Proxy Model

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 <9000'			FIBER FEEDER >9000'			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	255	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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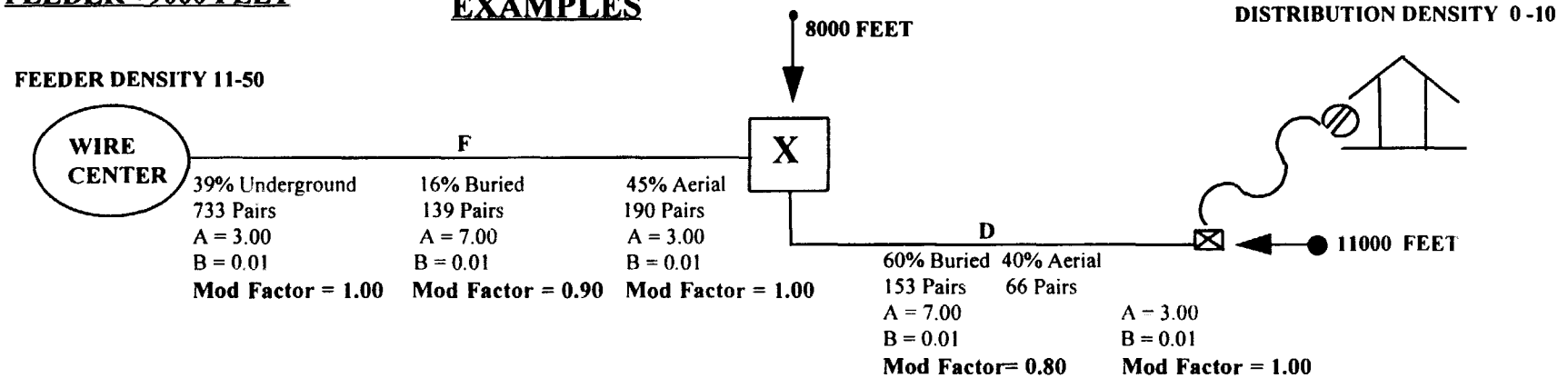
Pacific Bell Cost Proxy Model

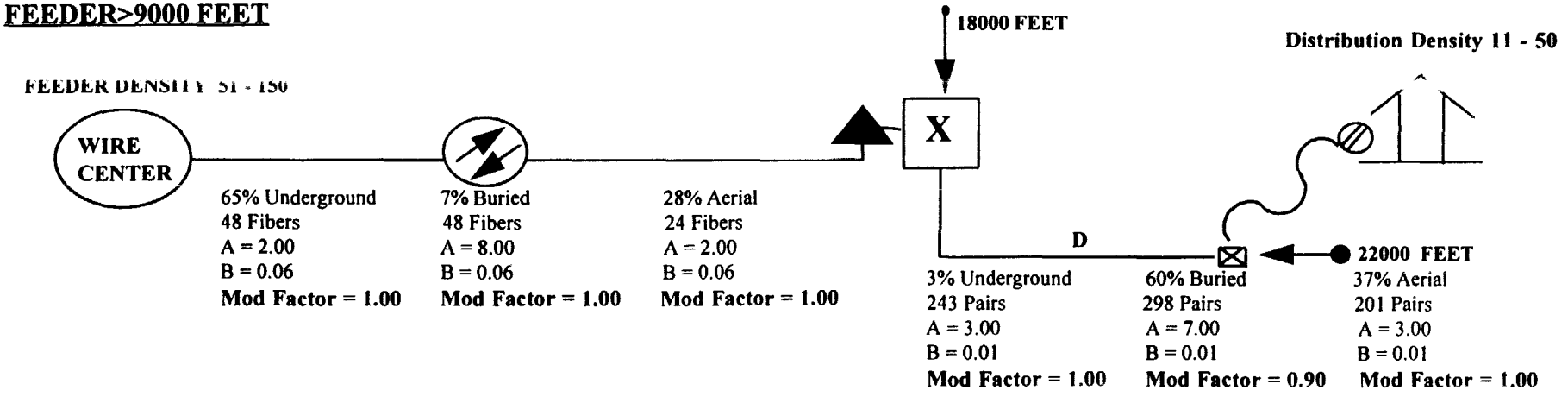
Loop Assumptions and Calculations

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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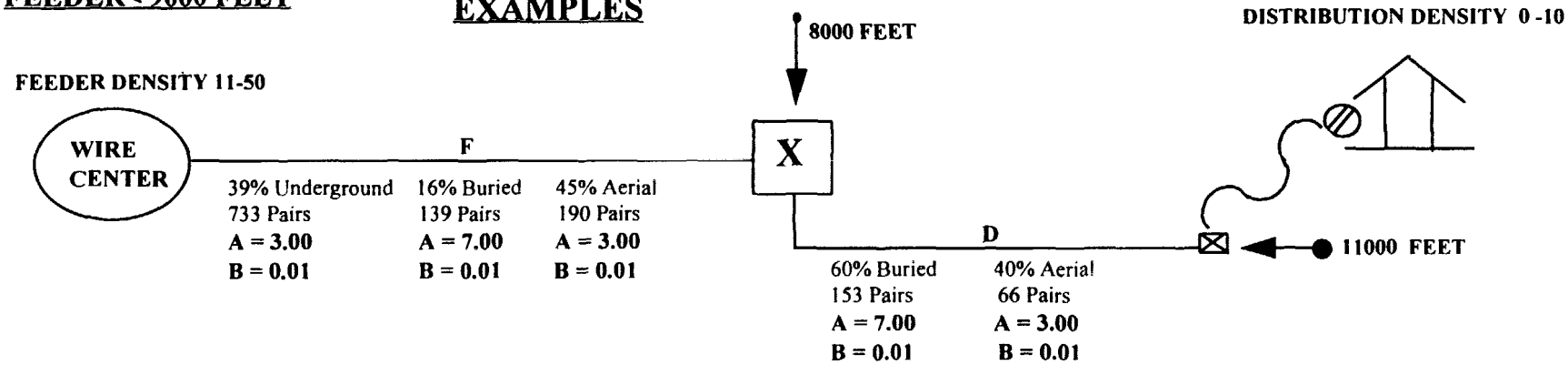
Pacific Bell Cost Proxy Model

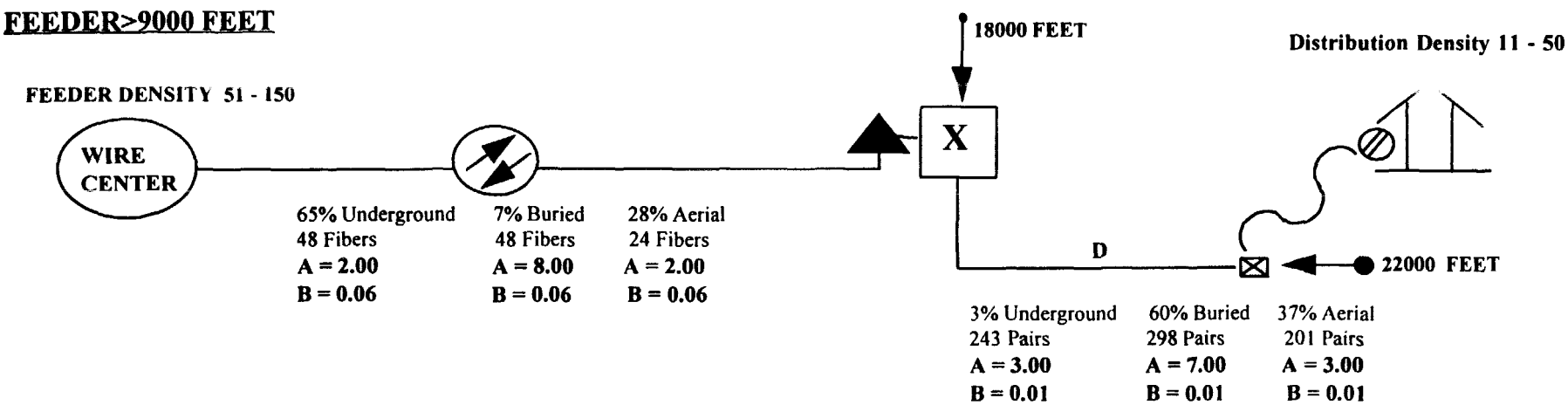
Loop Assumptions and Calculations

FEEDER< 9000 FEET

EXAMPLES



FEEDER>9000 FEET



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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 45C AND 845C					
				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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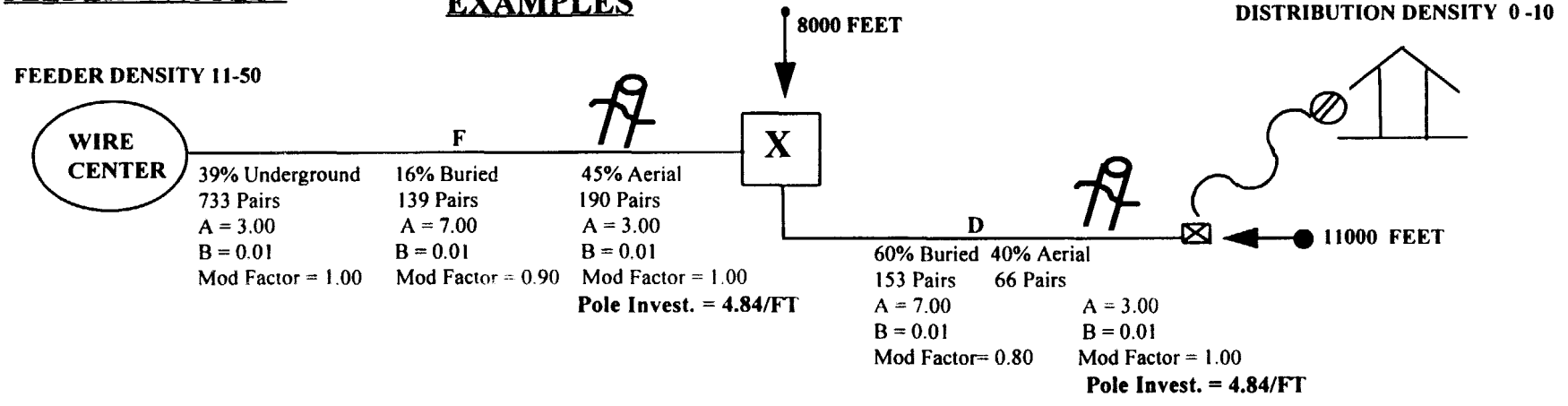
Pacific Bell Cost Proxy Model

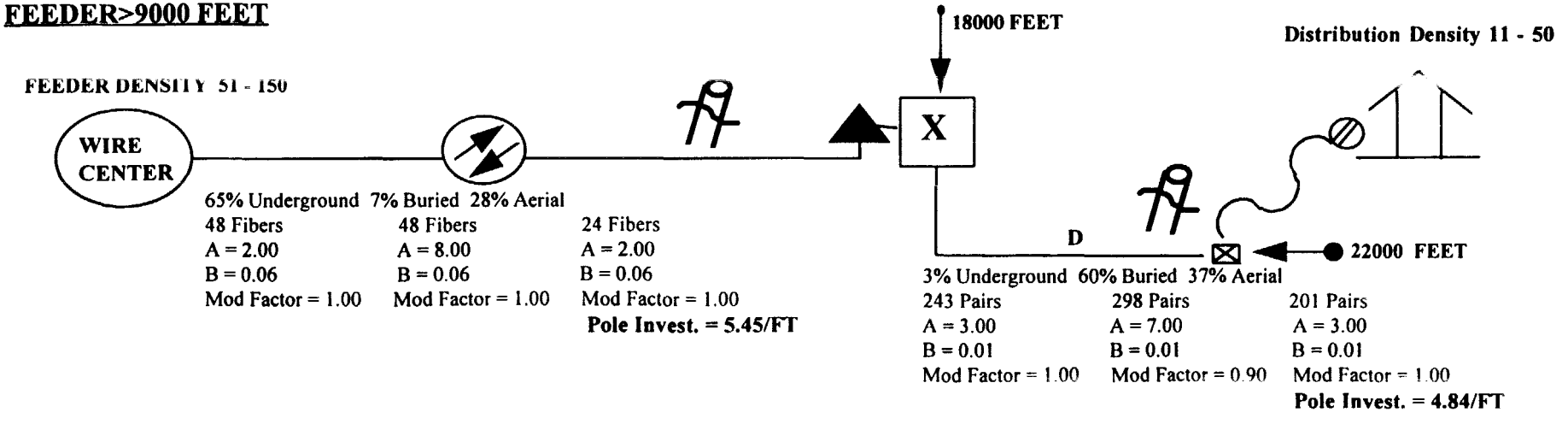
Loop Assumptions and Calculations

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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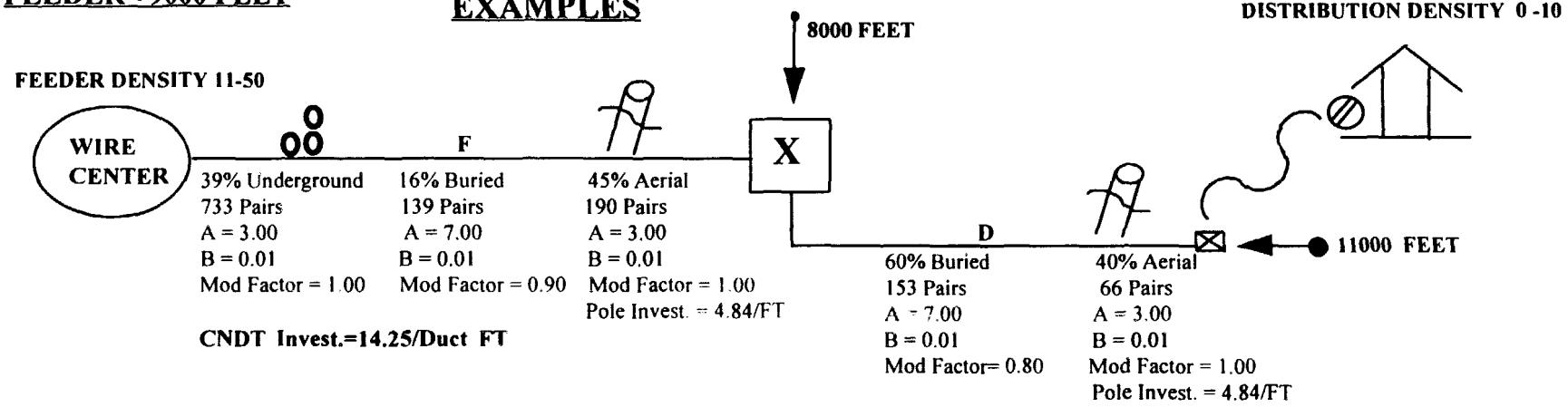
Pacific Bell Cost Proxy Model

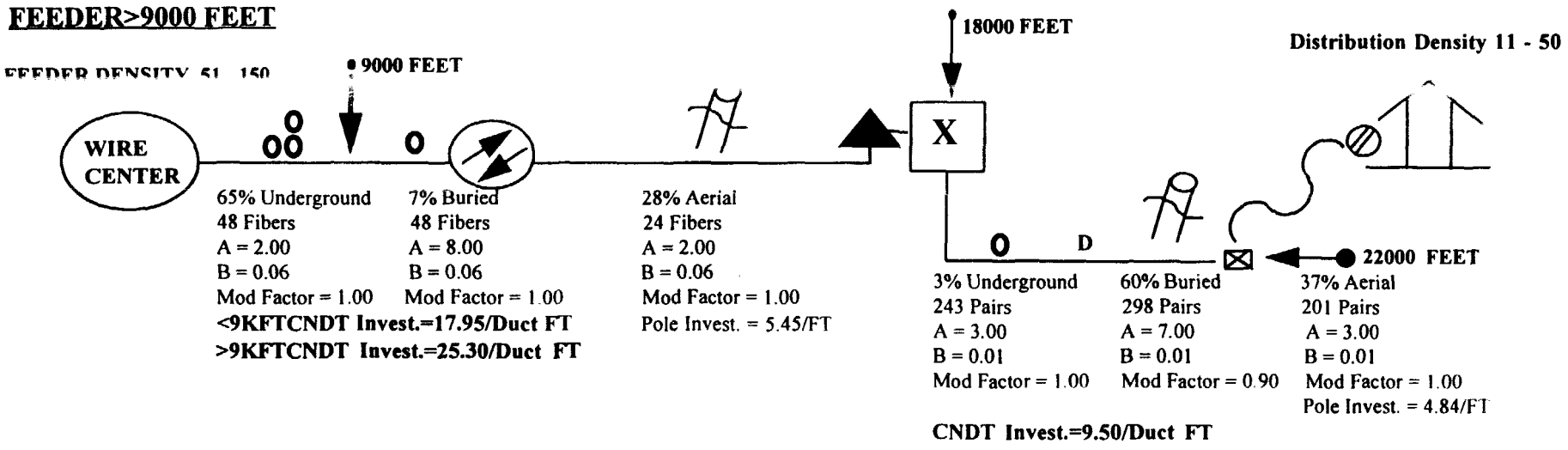
Loop Assumptions and Calculations

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		25.95		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

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Pacific Bell Cost Proxy Model

Loop Assumptions and Calculations

		4C - CONDUIT ($ PER DUCT-FOOT)						
			FOR 9.0 KFT AND LONGER					
				MED-DIF		HIGH-DIF		
DENSITY		NORMAL		(ROCK-S)		(ROCK-H)		WATER
0-10		15.10		22.30		30.30		30.30
11-50		18.50		27.50		34.70		34.70
51-150		25.30		35.65		44.85		44.85
151-500		26.30		38.30		50.30		50.30
501-2000		15.43		24.18		33.55		33.55
2001-5000		16.60		28.30		41.30		41.30
5001+		18.55		34.80		54.30		54.30

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Pacific Bell Cost Proxy Model
Loop Assumptions and Calculations

CONDUIT ($ PER DUCT-FOOT) - FRC 4C				
	DISTRIBUTION			
				ALL
DENSITY				TERRAINS
0-10				9.50
11-50				9.50
51-150				9.50
151-500				9.50
501-2000				9.50
2001-5000				9.50
5001+				9.50

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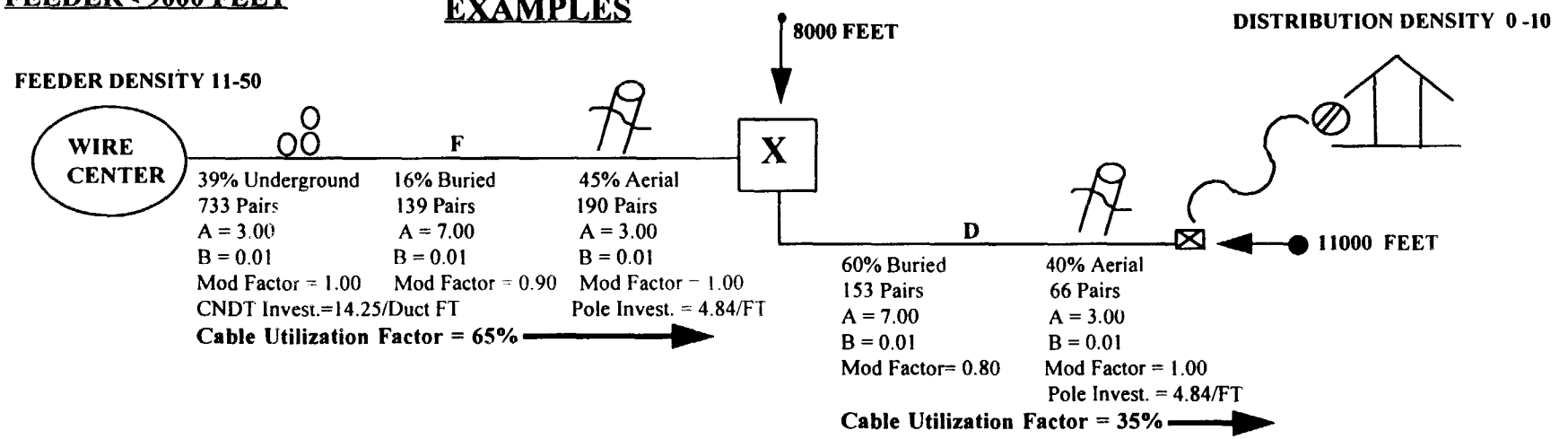
Pacific Bell Cost Proxy Model

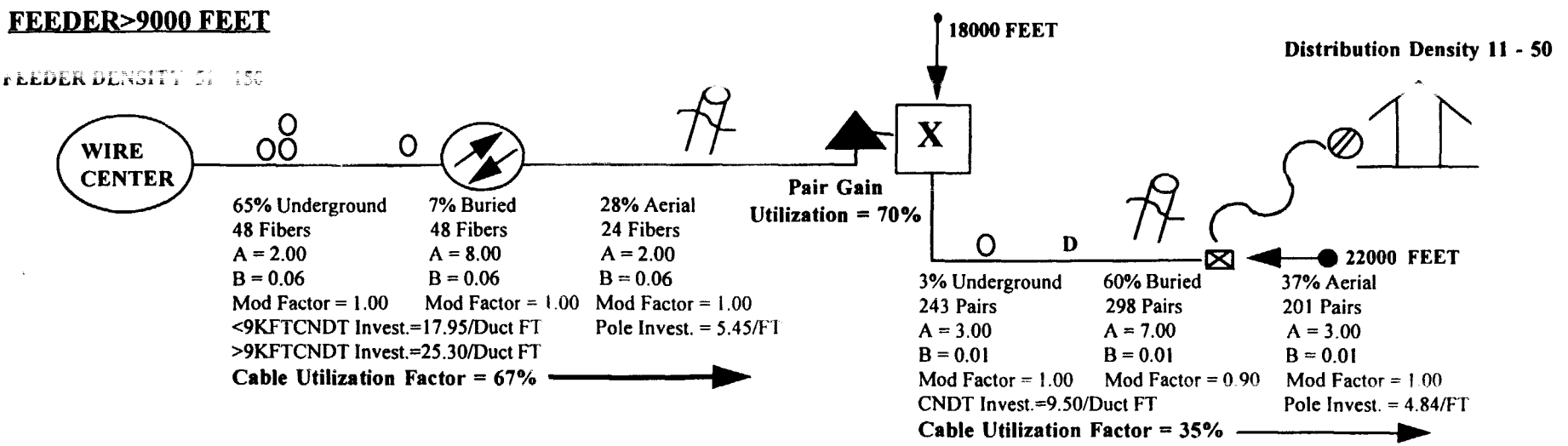
Loop Assumptions and Calculations

FEEDER< 9000 FEET

EXAMPLES



FEEDER>9000 FEET



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Pacific Bell Cost Proxy Model
Loop Assumptions and Calculations

	AVERAGE UTILIZATION % BY DENSITY ZONES			
	COPPER FEEDER	FIBER FEEDER	PAIR-GAIN EQUIP.	DISTRIBUTION
DENSITY	AVG UTILIZATION	AVG UTILIZATION	AVG UTILIZATION	AVG UTILIZATION
0-10	65%	67%	63%	35%
11-50	65%	67%	70%	35%
51-150	65%	67%	71%	36%
151-500	68%	67%	69%	37%
501-2000	65%	67%	65%	38%
2001-5000	65%	67%	65%	38%
5001+	62%	67%	63%	39%

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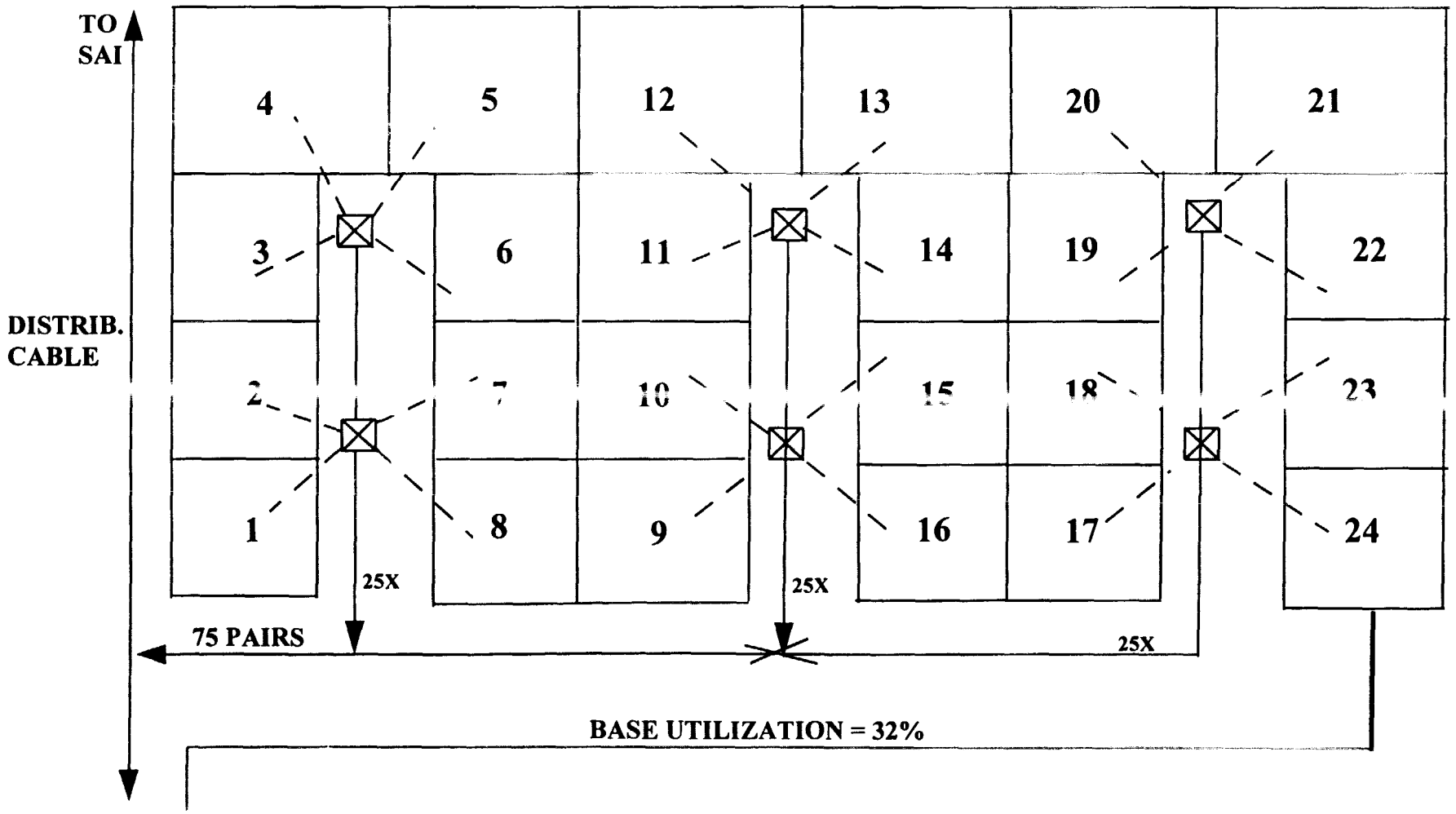
Pacific Bell Cost Proxy Model
Loop Assumptions and Calculations

DISTRIBUTION UTILIZATION

- 24 Lot subdivision
- Buried Plant
- Designed at 2 Lines/Lot
- Min. Size Cable = 25 Pair
- No multiple between Binder Groups
- Dedicated Plant



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Pacific Bell Cost Proxy Model

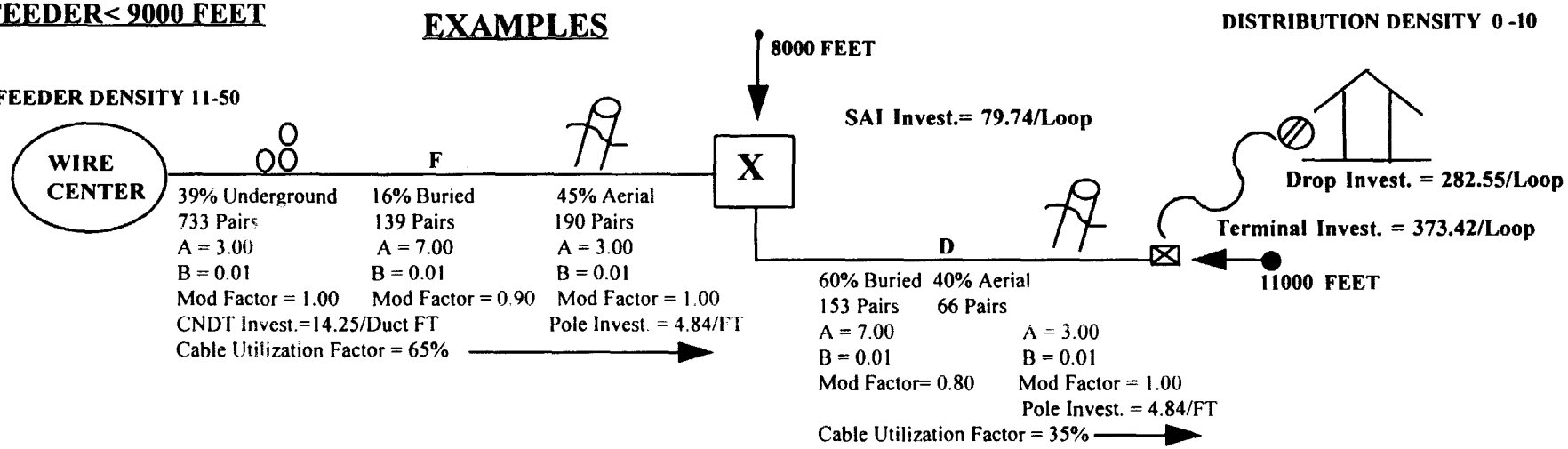
Loop Assumptions and Calculations

FEEDER< 9000 FEET

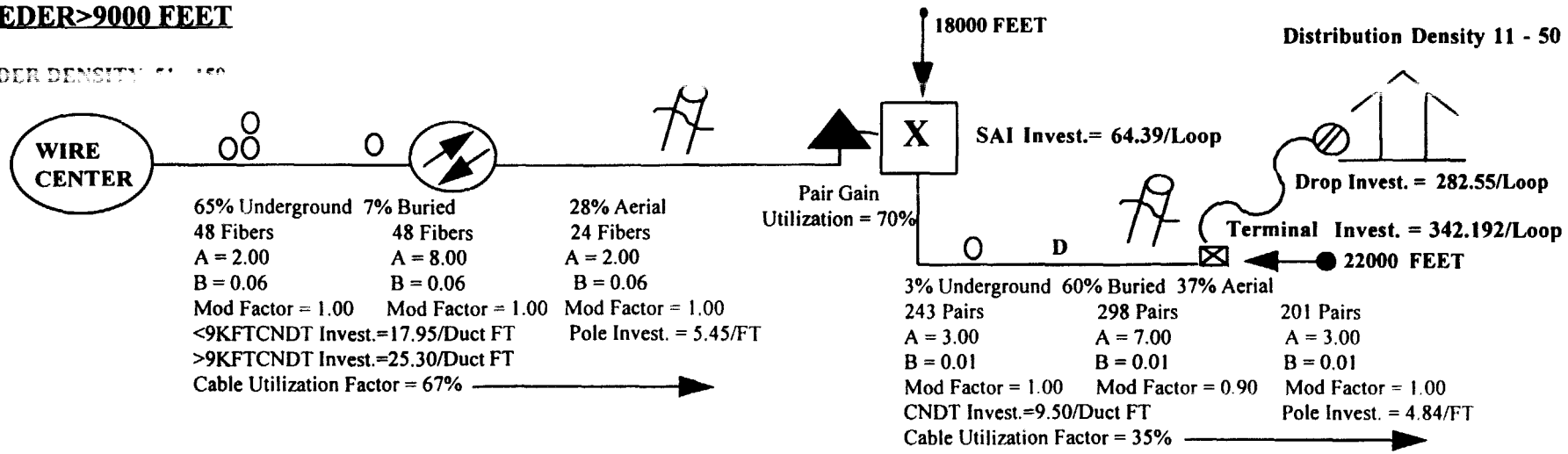
EXAMPLES

FEEDER DENSITY 11-50

DISTRIBUTION DENSITY 0 -10



FEEDER>9000 FEET

FEEDER DENSITY 51 - 150

Distribution Density 11 - 50