PARK

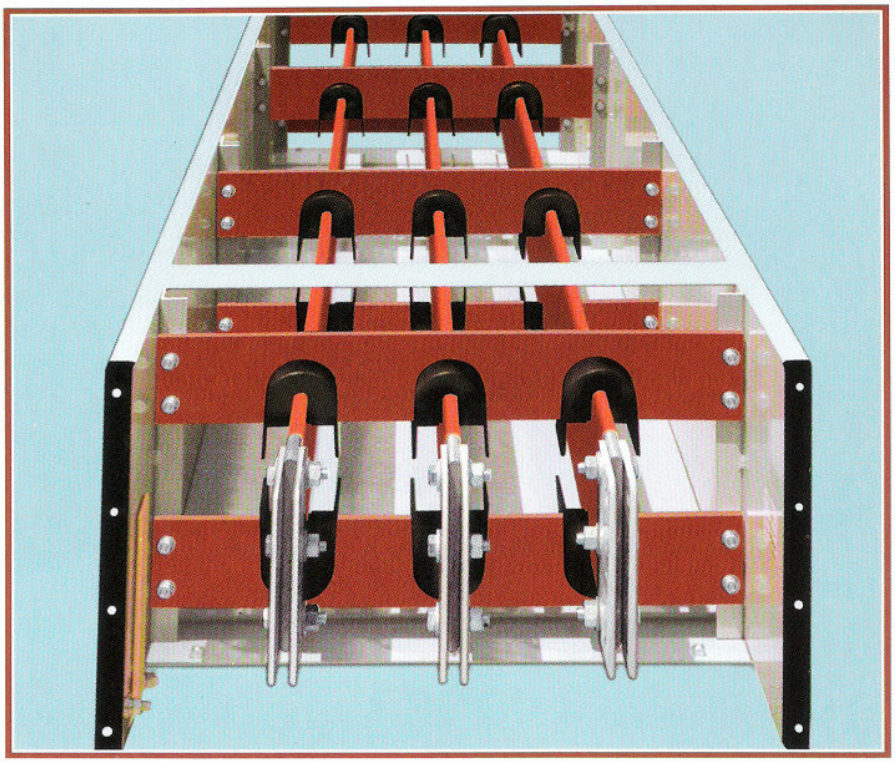
BUS WAYS



Engineered Solutions for Power Distribution

Bus Ways

Park bus runs are complete lines of non-segregated phase bus designed for inter-connecting groups of metal-enclosed or metal-clad switchgear, power transformers or other related equipment. Bar type, with aluminum or copper conductors, is available in 600 volt, 5, 15 and 38kV classes. All conductors are individually supported on insulating members. All necessary equipment–connection flanges, wall entrance seals, transformer and/or equipment taps, elbows, offsets, wall supports, splicing materials, terminal connectors – is included to make a complete installation. The bus duct is designed, manufactured and tested in accordance with ANSI Standard C37.20.



FEATURES & ADVANTAGES

- COMPACT AND LIGHTWEIGHT
- MAXIMUM DEPENDABILITY
- FACTORY ASSEMBLED
- STURDY, RIGID CONSTRUCTION
- CLEAN, ATTRACTIVE APPEARANCE

Custom Engineered – The entire bus system is specifically designed to suit the requirements of each installation.

Low Installation Cost – All manufacturing and assembly procedures requiring skilled labor are factory performed. Field installation requires only placing the bus sections on the supports, bolting splices, and connecting the ends to the apparatus terminals.

High Basic Impulse Insulation Levels – The basic impulse level of the bus duct is equal to or greater than that of the associated switchgear or other equipment.

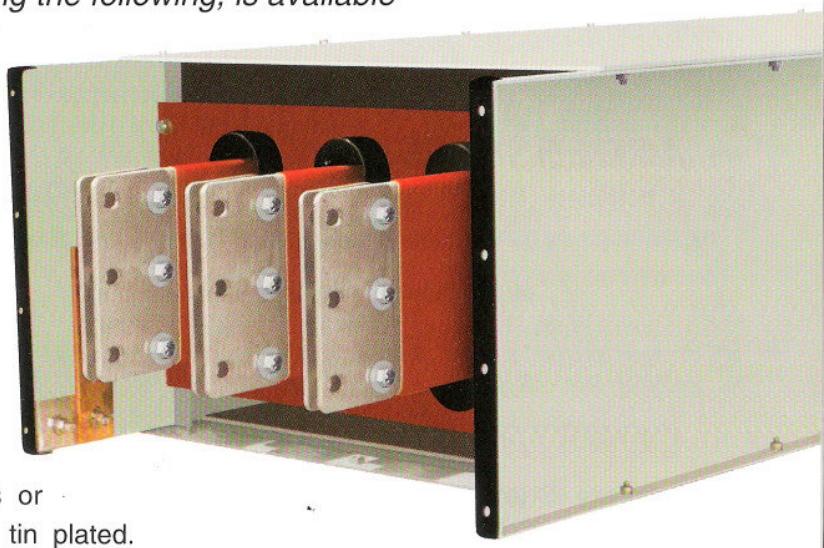
Metal Enclosed
Non-Segregated Phase Types

APPLICATIONS

Available in a wide range of ratings to allow proper application for a variety of installation conditions. Park bus runs can be applied in both indoor and outdoor service.

A complete line of bus sections, including the following, is available

1. Terminating sections for transformers and switchgear
2. T-taps and Y-taps.
3. Off-sets and elbows.
4. Wall entrance seals.



BAR TYPE BUS DUCT

The bus duct conductor is available in either tin-plated, full round edge, type #110, flat copper bars or electrical conductor grade aluminum alloy #6101-T61 tin plated. Ducts may be specified in voltage classes of 600 volts, 5kV, 15kV and 38kV with current ratings to 12000 amperes as standard. Standard bus bracing is 65KA – 600V, 40KA – 5kV, 40KA – 15kV and 20KA – 38kV.

With the exception of the 600 volt class, all phase bus work is insulated with flame retardant Epoxy insulation. All bus joints are plated and booted, utilizing standard insulating materials.

All bus work is supported on molded, flame retardant, glass-reinforced, polyester supports to meet the momentary withstands requirement of the application. Post type, porcelain bus supports are also available as an option. If an insulated neutral is required, it is necessary to modify the housing.

Where splice plates are required, they are equal in cross section to the main bus. All bus joints are made with one-half inch zinc plated, steel grade 5 hardware, or stainless.

BUS HOUSING

Both indoor and outdoor bus are totally enclosed and gasketed, and equipped with space heaters, when required. The top and bottom covers are removable to provide easy access to the bus. Painted aluminum, or painted steel housings are available in current ratings up to 2000 amperes. Above this current only aluminum enclosures are supplied. Where a bus duct passes through a wall from indoor to outdoor, a weatherproof seal with a vapor barrier to prevent the passage of vapors is provided. Both indoor and outdoor bus runs are supplied in unbroken sections as specified by the purchaser, up to a maximum of 30 feet.

Space heaters are mounted inside the outdoor housings to prevent condensation. They are 500 watt, 240 volt heaters wired to a 120 volt source. With this arrangement each heater will produce approximately 125 watts which prolongs the life of the heater element. They are spaced approximately every seven to ten feet along the length of outdoor bus run. The wiring is terminated in a junction box for connection to the customer's source. This junction box is normally located on the side of the duct, inside the building, just beyond the wall flange.

Bus Ways

BUS SUPPORTS

Trapeze type hanger bars for every ten feet of bus are available as part of the assembly on indoor installations to support the bus runs. Wall brackets for vertical or horizontal mountings, and self-supporting bus runs are also available. Outdoor duct supports are provided by purchaser, unless specified at time of quote. One support for every ten feet of duct is required.

ACCESSORIES

A complete line of elbows, tees, terminations for transformers and switchgear, phase transpositions, expansions or earthquake joints, wall entrance seals, flexible connectors, bushing stud connectors and terminal enclosures is available.

CONSTRUCTION OPTIONS

Momentary (Short Circuit) Ratings

Voltage Class	Amperage	
600V	65KA 100KA 150KA 200KA	Standard Optional Optional Optional
5KV	40KA 80KA 100KA	Standard Optional Optional
15KV	40KA 80KA 100KA 150KA	Standard Optional Optional Optional
38KV	20KA 35KA 40KA	Standard Optional Optional

Ground Bus

Bar Size & Location Copper or Aluminum
External 1/4" x 2" Internal 1/4" x 2" External 1/4" x 4" Internal 1/4" x 4"

Bus Enclosures

Material & Finish	
Painted Aluminum (1/8" Nominal) Painted 14 Gauge Steel Painted 11 Gauge Steel Unpainted 14 Gauge 304 Stainless Steel Unpainted 14 Gauge 316 Stainless Steel	Standard Optional Optional Optional Optional

GENERAL PRODUCT INFORMATION

Park Bus Duct is custom designed, manufactured and tested as per latest ANSI C.37.20 standards to meet customer specifications. It is a completely coordinated package of equipment with all the auxiliary material and supports for connecting transformers, switchgear, MCC's and motors.

FEATURES

- Non-segregated phase bus
- 600V thru 38KV
- Up to 12000A ratings
- Aluminum, steel or stainless steel housing
- Insulated with powder epoxy applied by fluidized bed process
- Complete line of fittings provides for any configuration
- Indoor trapeze and outdoor column support

Flanged Ends

A flanged end is used to terminate the bus into switchgear, motor control centers, switchboards, or any rigid bus-to-bus connection. It consists of a gasketed equipment flange, up to 1'-0" of 3P-3W conductor (3P-4W as applicable), necessary insulation tapes, and required bolting hardware.

Cable Tap Box

A cable tap box includes a gasketed and accessible termination box, lugs, necessary insulation tape (between bus and lugs only), and required bolting hardware. Lug sizes and quantity should be specified by purchaser.

Transformer/Generator Connection

Will include the same components as a flanged end plus one set of flexible braid type connectors and a terminal box (if required).

Bushing Box (Weatherhead)

A bushing box is used on service entrance run where the cable connection to the bus must be made via porcelain bushings. It is comprised of the same components as a transformer connection plus 3 through stud type apparatus bushings, bushing stud connectors (lug pads) and a strip heater.

Ground Bus

The bus housing is designed and constructed to provide an electrically continuous ground path. The side rails of the bus housings are capable of carrying the full rated phase current continuously and, under short circuit conditions, are capable of carrying up to 100KA RMS asymmetrical fault current for 167ms. Consequently, a separate ground bus is not necessary unless specified.

Wall Entrance Seal

A wall entrance seal consists of wall throat, wall flange (one side of wall only), and a barrier which prevents air or vapor from passing from one room to anther or from outdoors to indoors. It also carries a 1 hour fire rating.

Equipment Entrance Seal

An equipment entrance seal is needed when a barrier is required to prevent the passing of flame and/or gas between the bus housing and the terminating equipment.

Expansion Fittings

An expansion fitting is used to counteract the strain placed on the bus due to the expansion and contraction of the building or the bus itself. Expansion fittings should be used whenever the bus run crosses a building expansion joint and whenever a straight run of bus exceeds 60 feet.

Flexible Housing (Misalignment) Collar

This is required at terminations or wall penetrations when vibrations due to seismic forces may cause damage to the bus. It may also be used to adjust for the "settling" of terminating equipment after installation.

Supporting Steel (Hangers)

Supports should be added on the basis of one for every 5 ft. for indoor and one for every 12-20 ft. for outdoor. Indoor supports are a trapeze type hanger while outdoor supports are a single or double column type support.

Hazardous or Seismic Locations

Consult Park for bus runs which are to be installed in a location which is classified as hazardous or in a Zone 3 or Zone 4 seismic location.

Housings

- Aluminum, steel and stainless steel housing are available to meet a variety of environments. Non-magnetic housings are supplied at ratings above 2000 amperes.
- Outdoor housings are weatherproof and furnished with screened breathers and electric space heaters for condensation control.
- Covers are gasketed sloped to shed rain and are removable top and bottom.
- Ventilated indoor buses with louvers top and bottom covers are available.
- 500-watt, 240-volt heaters, operated at 120 volts and mounted via weatherproof junction box for easy removal, are supplied on 7' to 10' centers on outdoor bus systems. Facilities are supplied for connecting heaters to purchaser's power supply.

Conductors

Buses are supplied with copper or aluminum conductors per purchaser's specifications. Tin or silver-plated contact surfaces at all joints or terminations. Internal or external ground bars or neutral bars are available as required

Insulation

Bus bars are insulated with fluidized bed epoxy, and mounted with corona control devices in insulator support inserts.

Bus Ways

Data Tables

5000 & 15000 VOLTS			WEIGHT	DUCT DIMENSIONS(IN)					DUCT DIMENSIONS (INCHES MIN)										RESISTANCE	WATTS PER 3 PHASE FOOT	REACTANCE	INPEDANCE
	AMPERES	FIG	CONDUCTORS	LBS/FT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	OHMS X 10^6		OHMS X 10^6	OHMS X 10^6
COPPER	1200	1	(1) 1/4 x 4	29	7	14	28	15 1/2	-	24	24	24	24	48	20	18	480	48	24	11	47.66	51.2	52.5
	1600	1	(1) 1/4 x 5	35	7	15	28	16 1/2	-	24	24	24	24	48	20	18	480	48	24	9.48	72.83	46.4	47.3
	2000	1	(1) 5/8 x 4	50	7	14	28	15 1/2	-	24	24	24	24	48	20	18	480	48	24	5.54	66.42	49.3	49.6
	2500	1	(1) 1/2 x 6	59	7	16	28	17 1/2	-	24	24	24	24	48	20	18	480	48	24	4.63	86.88	41.4	41.7
	3000	1	(1) 1/2 x 8	77	7	18	28	19 1/2	-	24	24	24	24	48	20	18	480	48	24	3.58	96.77	35.3	35.5
	3200	1	(1) 1/2 x 8	77	7	18	28	19 1/2	-	24	24	24	24	48	20	18	480	48	24	3.67	112.76	35.3	35.5
	3500	2	(2) 1/2 x 6	122	8	16	32	17 1/2	3	28	28	28	28	48	22	18	480	48	28	2.33	85.78	25.3	25.4
	4000	2	(2) 5/8 x 6	137	8	16	32	17 1/2	3	28	28	28	28	48	22	18	480	48	28	2.11	127.88	28.9	29.0
	4500	2	(2) 1/2 x 8	150	12	24	40	25 1/2	3	36	36	36	36	48	26	18	480	48	36	1.83	111.14	26.9	27.0
	5000	2	(2) 5/8 x 8	168	12	24	40	25 1/2	3	36	36	36	36	48	26	18	480	48	36	1.59	119.47	26.6	26.7

38000 VOLTS			WEIGHT	DUCT DIMENSIONS(IN)					DUCT DIMENSIONS (INCHES MIN)										RESISTANCE	WATTS PER 3 PHASE FOOT	REACTANCE	INPEDANCE
	AMPERES	FIG	CONDUCTORS	LBS/FT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	OHMS X 10^6		OHMS X 10^6	OHMS X 10^6
COPPER	600	1	(1) 1/4 x 4	30	12	24	49	25 1/2	-	45	45	45	45	48	31	18	480	59	45	9.72	10.50	63.6	64.3
	1200	1	(1) 1/4 x 4	30	12	24	49	25 1/2	-	45	45	45	45	48	31	18	480	59	45	10.80	46.52	63.6	64.5
	1600	1	(1) 1/4 x 5	32	12	24	49	25 1/2	-	45	45	45	45	48	31	18	480	59	45	9.26	71.12	58.7	59.5
	2000	1	(1) 5/8 x 4	35	12	24	49	25 1/2	-	45	45	45	45	48	31	18	480	59	45	5.43	65.19	61.6	61.9

600 VOLTS			WEIGHT	DUCT DIMENSIONS(IN)					DUCT DIMENSIONS (INCHES MIN)										RESISTANCE	WATTS PER 3 PHASE FOOT	REACTANCE	INPEDANCE
	AMPERES	FIG	CONDUCTORS	LBS/FT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	OHMS X 10^6		OHMS X 10^6	OHMS X 10^6
COPPER	1200	1	(1) 1/4 x 4	29	7	14	28	15 1/2	-	24	24	24	24	48	20	18	480	48	24	9.16	39.56	51.2	52.0
	1600	1	(1) 1/4 x 5	35	7	15	28	16 1/2	-	24	24	24	24	48	20	18	480	48	24	9.12	70.02	46.4	47.3
	2000	1	(1) 5/8 x 4	50	7	14	28	15 1/2	-	24	24	24	24	48	20	18	480	48	24	5.34	64.07	49.3	49.6
	2500	1	(1) 1/2 x 6	59	7	16	28	17 1/2	-	24	24	24	24	48	20	18	480	48	24	4.47	83.72	41.4	41.7
	3000	1	(1) 1/2 x 8	77	7	18	28	19 1/2	-	24	24	24	24	48	20	18	480	48	24	3.15	84.92	35.3	35.5
	3200	1	(1) 1/2 x 8	77	7	18	28	19 1/2	-	24	24	24	24	48	20	18	480	48	24	3.53	108.42	35.3	35.5
	3500	2	(2) 1/2 x 6	122	8	16	32	17 1/2	3	28	28	28	28	48	22	18	480	48	28	2.31	84.91	25.3	25.4
	4000	2	(2) 5/8 x 6	137	8	16	32	17 1/2	3	28	28	28	28	48	22	18	480	48	28	2.07	125.75	28.9	29.0
	4500	2	(2) 1/2 x 8	150	12	24	40	25 1/2	3	36	36	36	36	48	26	18	480	48	36	1.81	109.95	26.9	27.0
	5000	2	(2) 5/8 x 8	168	12	24	40	25 1/2	3	36	36	36	36	48	26	18	480	48	36	1.57	117.90	26.6	26.7

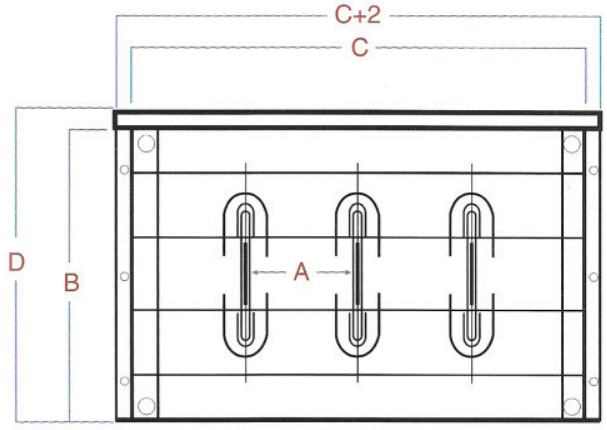


FIGURE 1

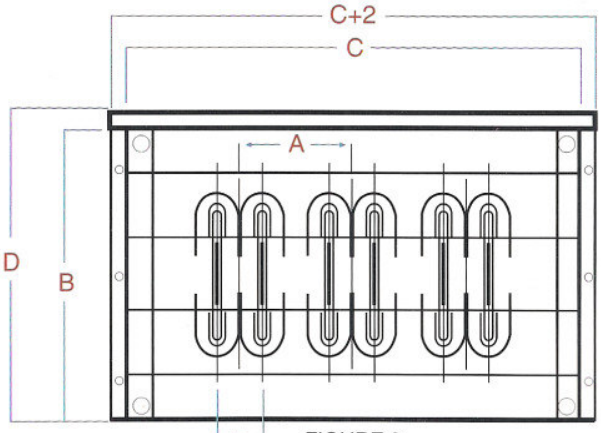
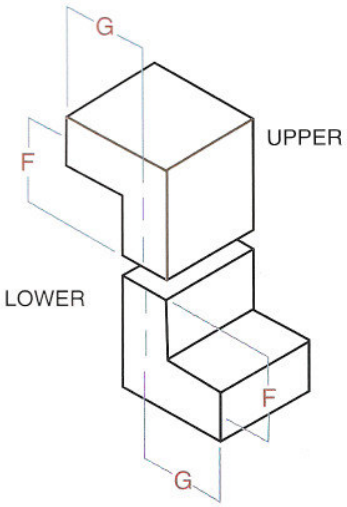
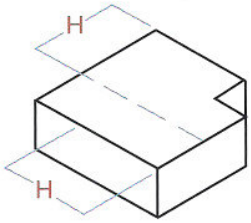


FIGURE 2

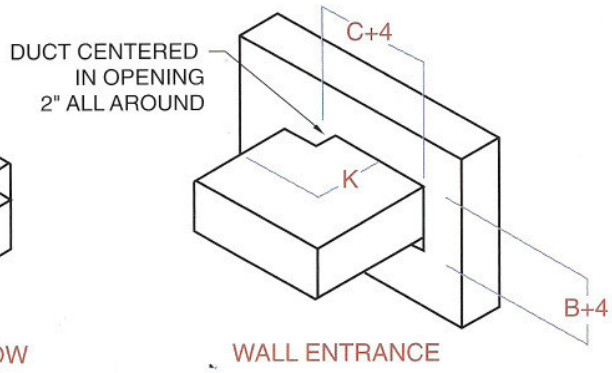
Elbows, Tees and Transition Connections



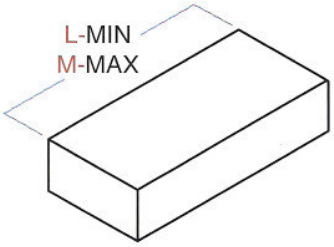
VERTICAL ELBOWS



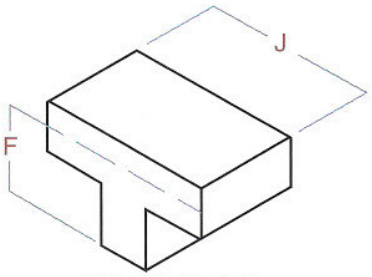
HORIZONTAL ELBOW



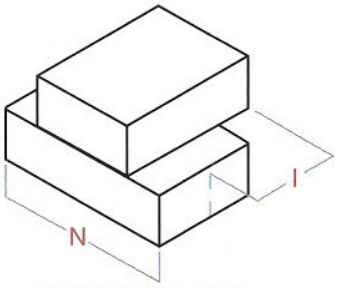
WALL ENTRANCE



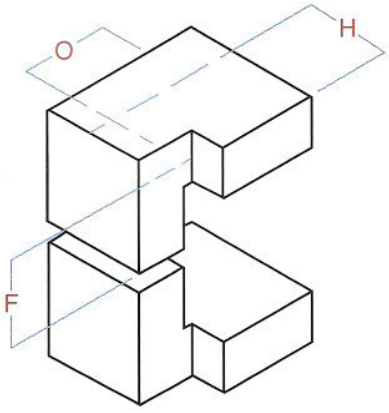
STRAIGHT



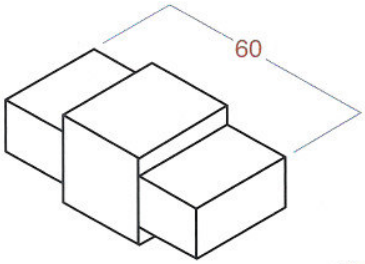
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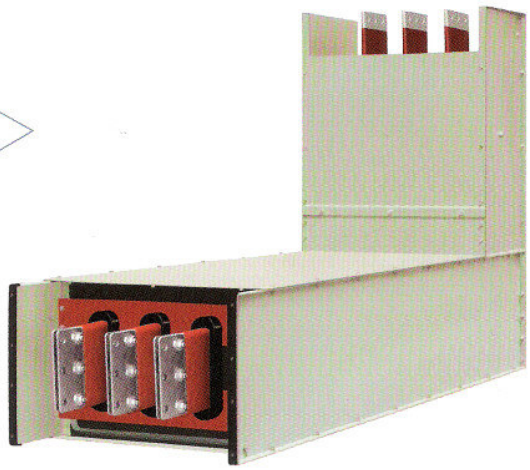
HORIZONTAL TEE



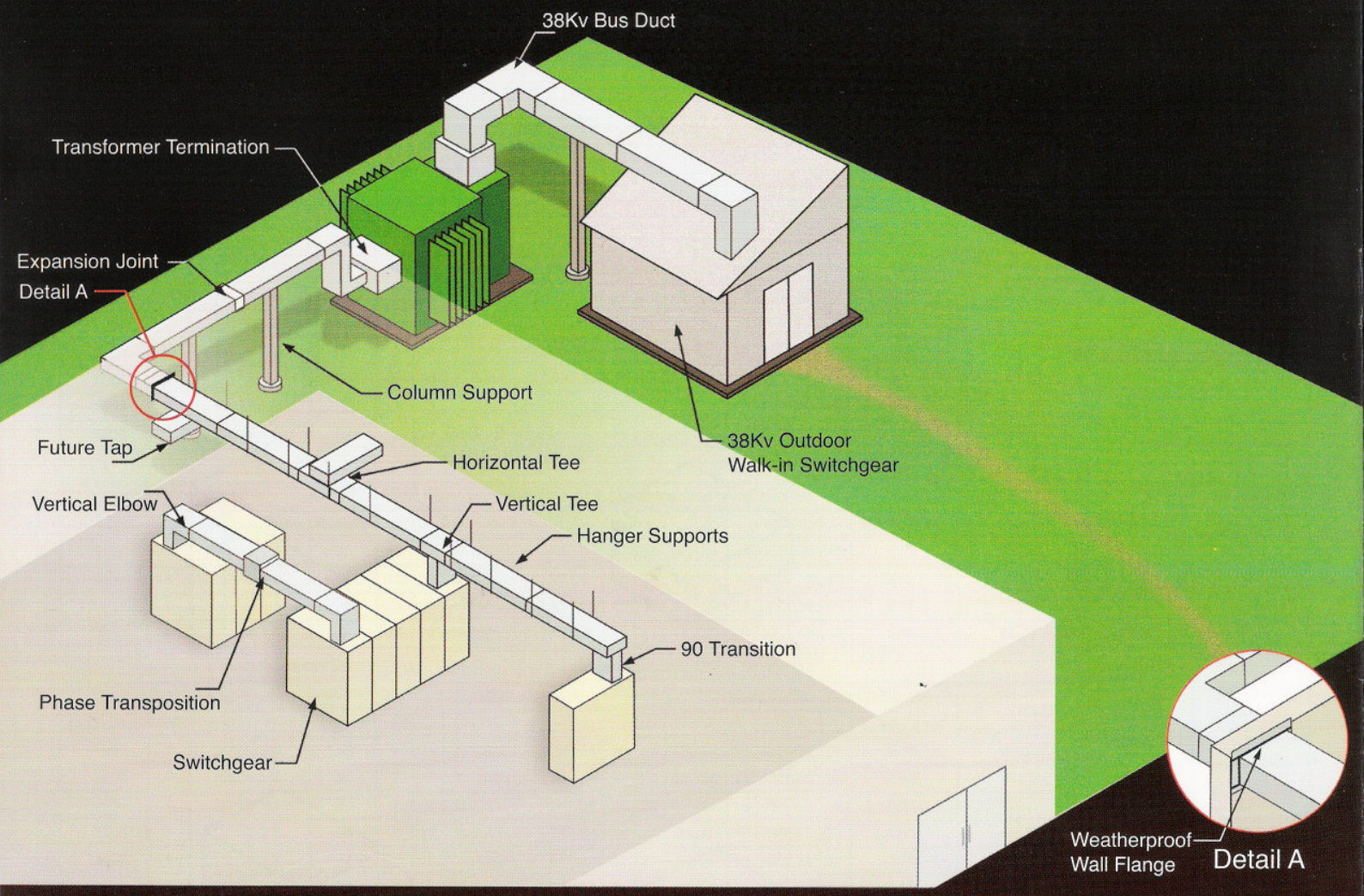
TRANSITION



TRANSPOSITION



Typical Bus Duct Installation



PARK

Established 1945

POWER DISTRIBUTION SYSTEMS

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