

LIST OF ABBREVIATIONS AND SYMBOLS

Abbreviations	Name	First use on the page
SCM	Supply Chain Management	14
VRP	Vehicle Routing Problem	10
CDE	Colt Diesel Engkle	8
CDC	Colt Diesel Double	8
DO	Delivery Order	8
LTL	Less Than Truckload	18
LCL	Less Than Container load	19
FTL	Full Than Truckload	19
FCL	Full Than Container load	19
DC	Distribution Center	19

SYMBOLS / NOTATION

V	= node set
N	= customer set
A	= arc set or connections between nodes
K	= fleet of vehicle set
C	= vehicle type set
i	= notation index, $i = 1, 2, 3, \dots \dots N$ is customer that start distribution activity.
j	= notation index, $i = 1, 2, 3, \dots \dots N$ is customer that start distribution activity.
k	= notation index, $k = 1, 2, 3, \dots \dots K$ is fleet of vehicle that used for distribution activity.
c	= notation index, $c = 1, 2, 3, \dots \dots C$ is vehicle type that used for distribution activity.
m_{ij}	= travel distance between arc (i, j)
t_{ij}	= travel time between arc (i, j)

d_i	= demand of customer i ($i \in N$)
$[e_i, l_i]$	= time window of customer i (earliest arrival and latest arrival)
s_i	= service time of customer i ($i \in N$)
$[e_0, l_0]$	= time window of DC (earliest departure, latest return)
q_c	= capacity of vehicle type c ($c \in C$)
n_c	= number of available vehicle for vehicle type c ($c \in C$)
x_{ij}^k	= 1, if arc (i, j) is passed by vehicle k = 0, if arc (i, j) is not passed by vehicle k
a_{ik}	= arrival time of vehicle k at customer i