ArcGIS for FTTx Design

Design FTTx network using ArcGIS

DHVSSolutions

Delivering Higher Value Services and Solutions

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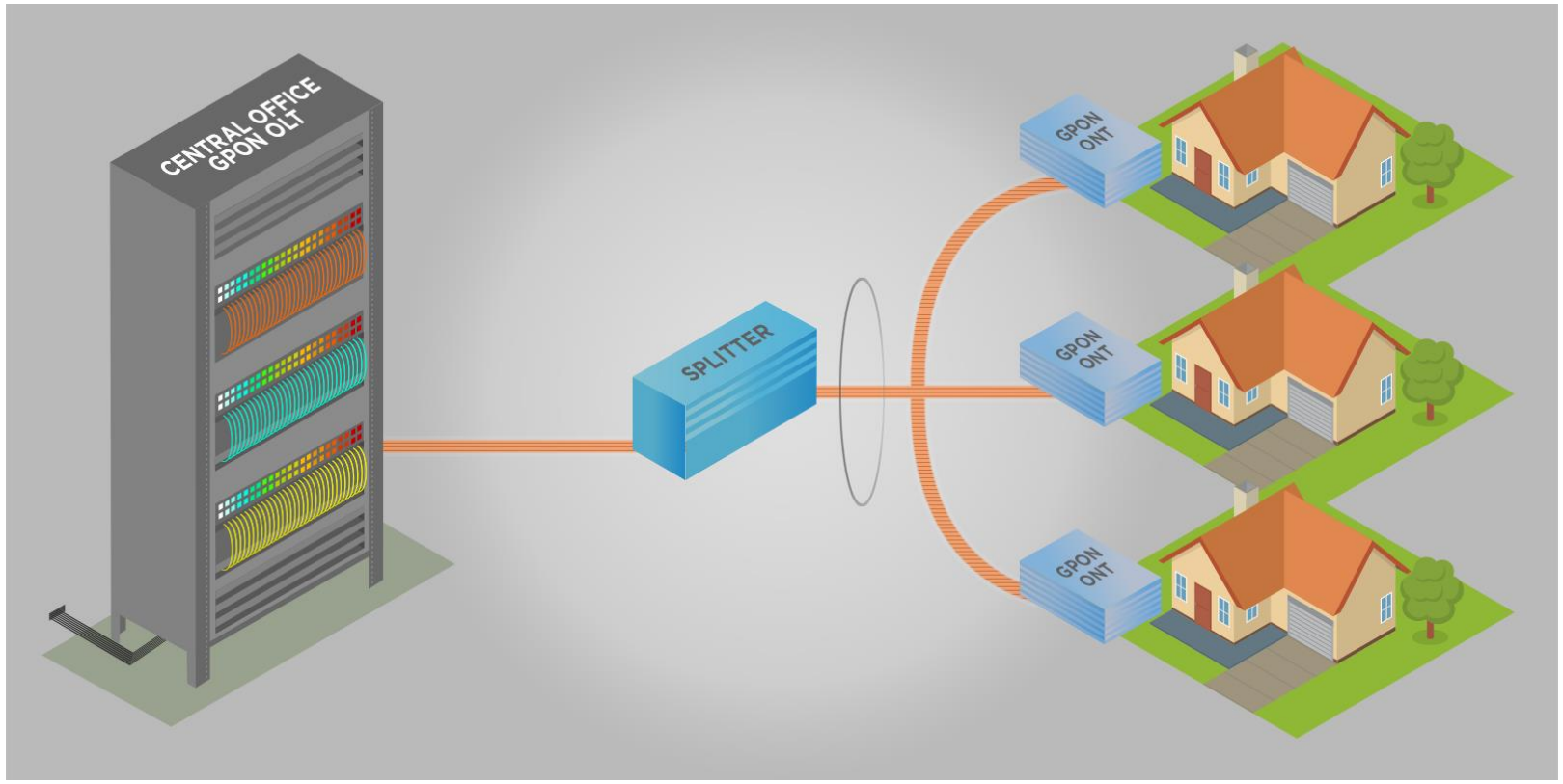
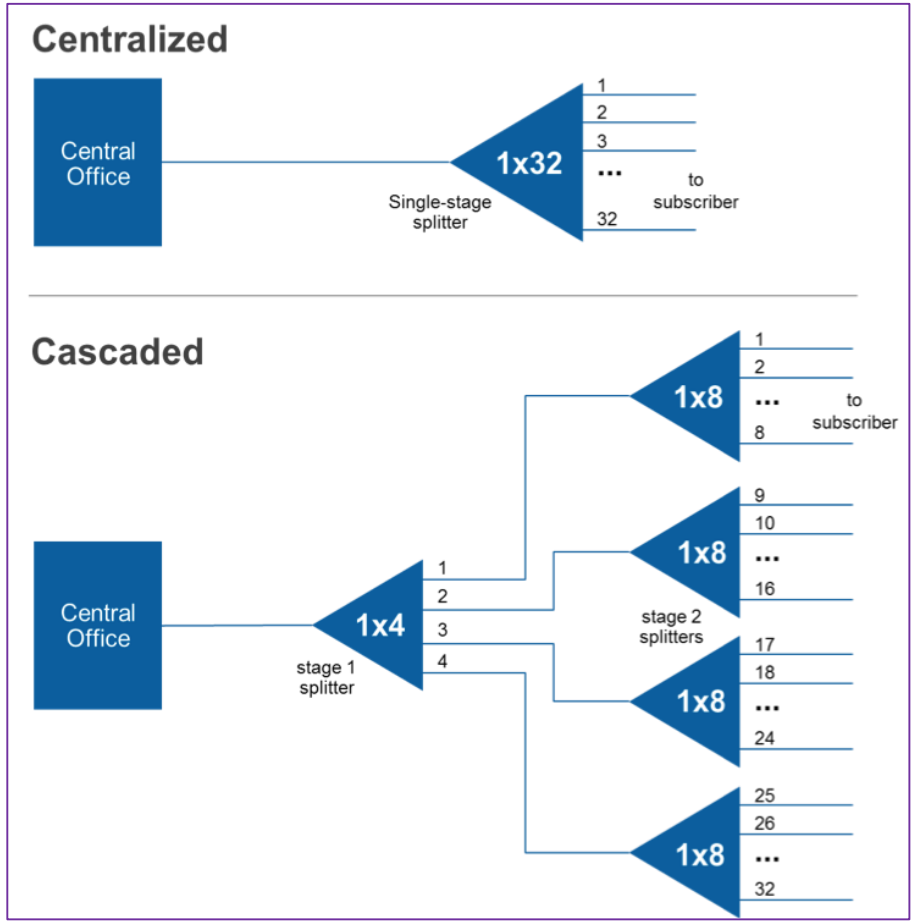
FTTx

- Fiber to the Home (FTTH)
- Fiber to the Building (FTTB)
- Fiber to the Premises (FTTP)
- Fiber to the Curb (FTTC)

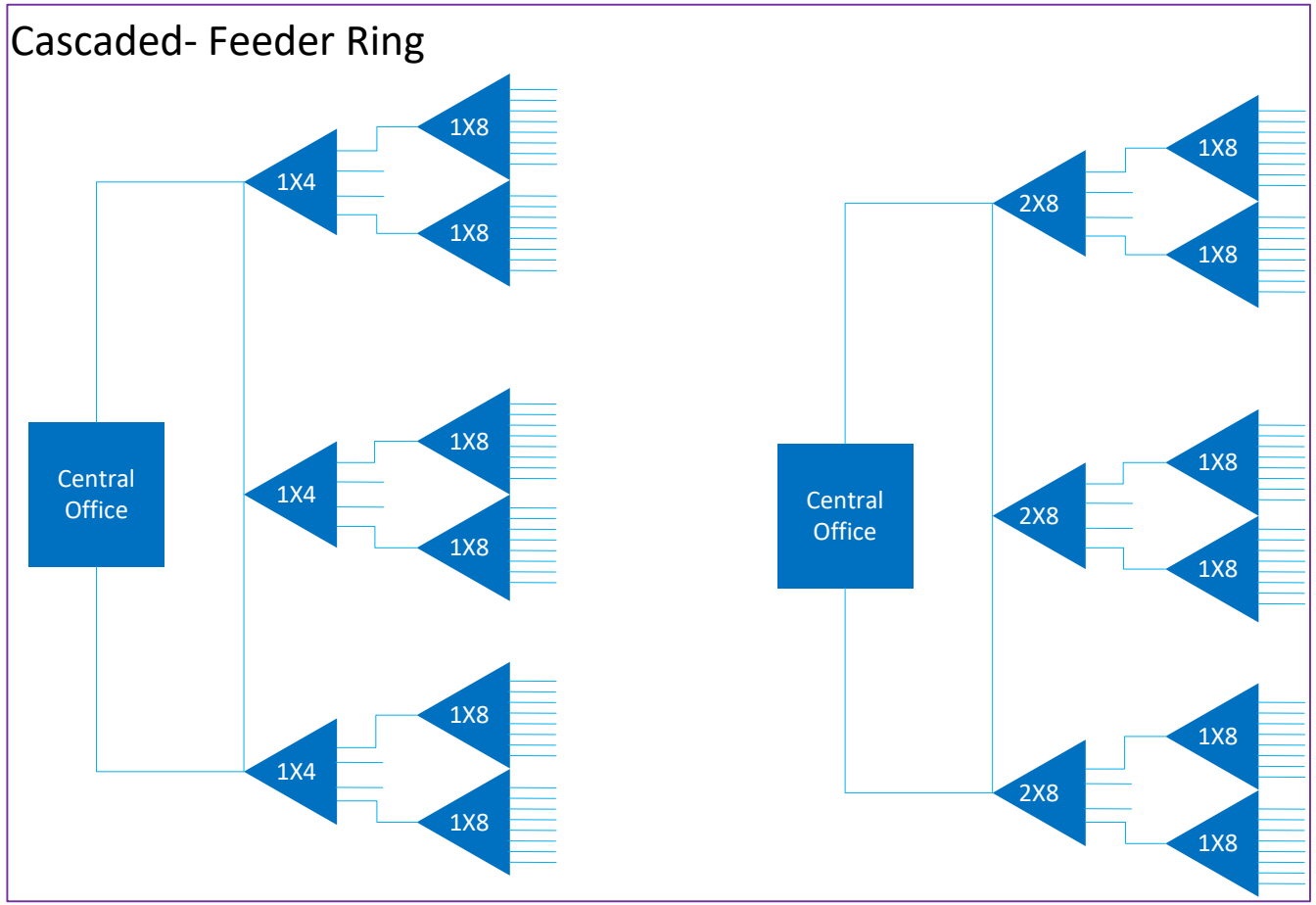
FTTx Topology



FTTx Topology



FTTx Topology



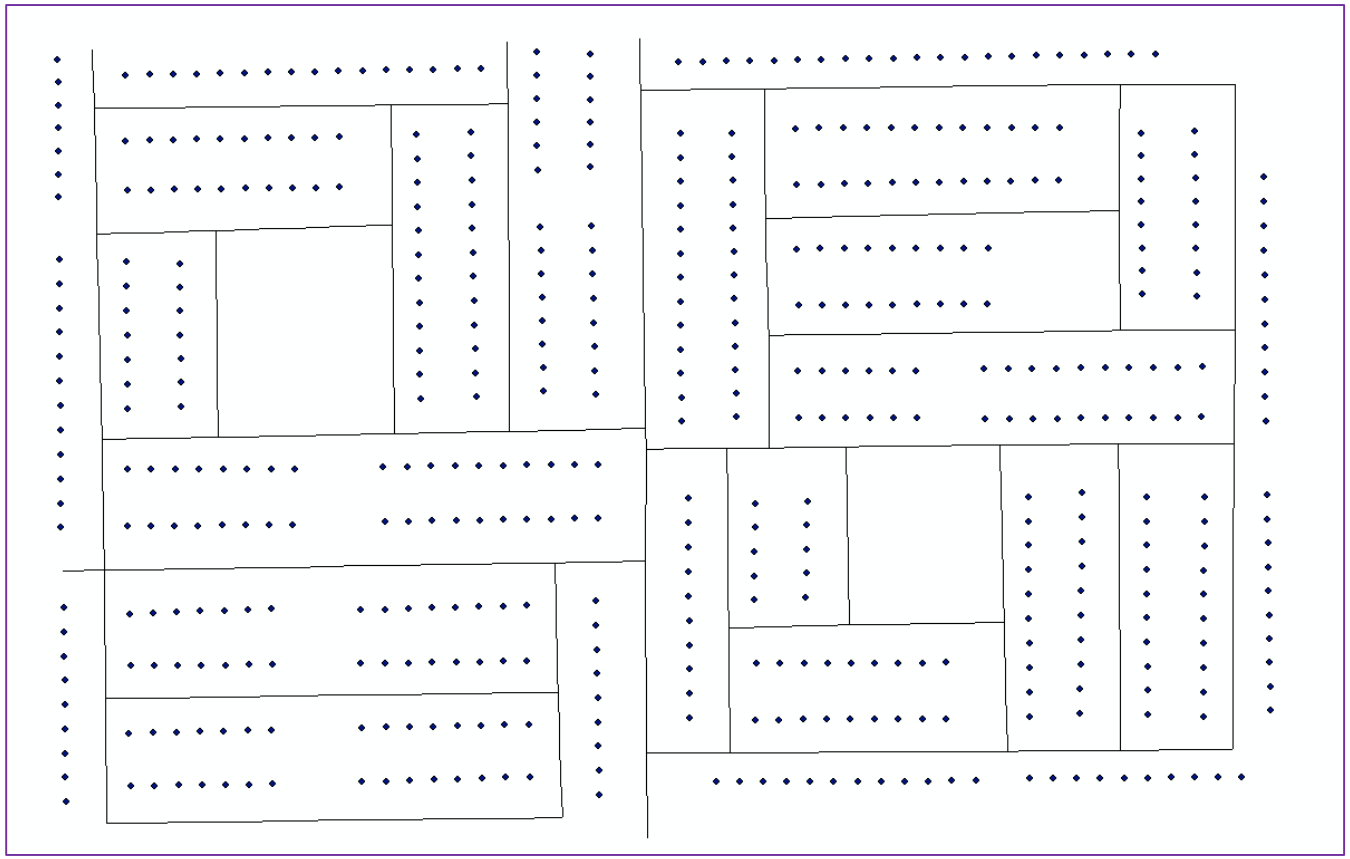
FTTx Design & Inventory Management Challenges

- Data Migration
- Visibility to multiple uses
- Reports
- Inventory Management
- Data Transfer to OSS & BSS systems
- Track As-built Changes

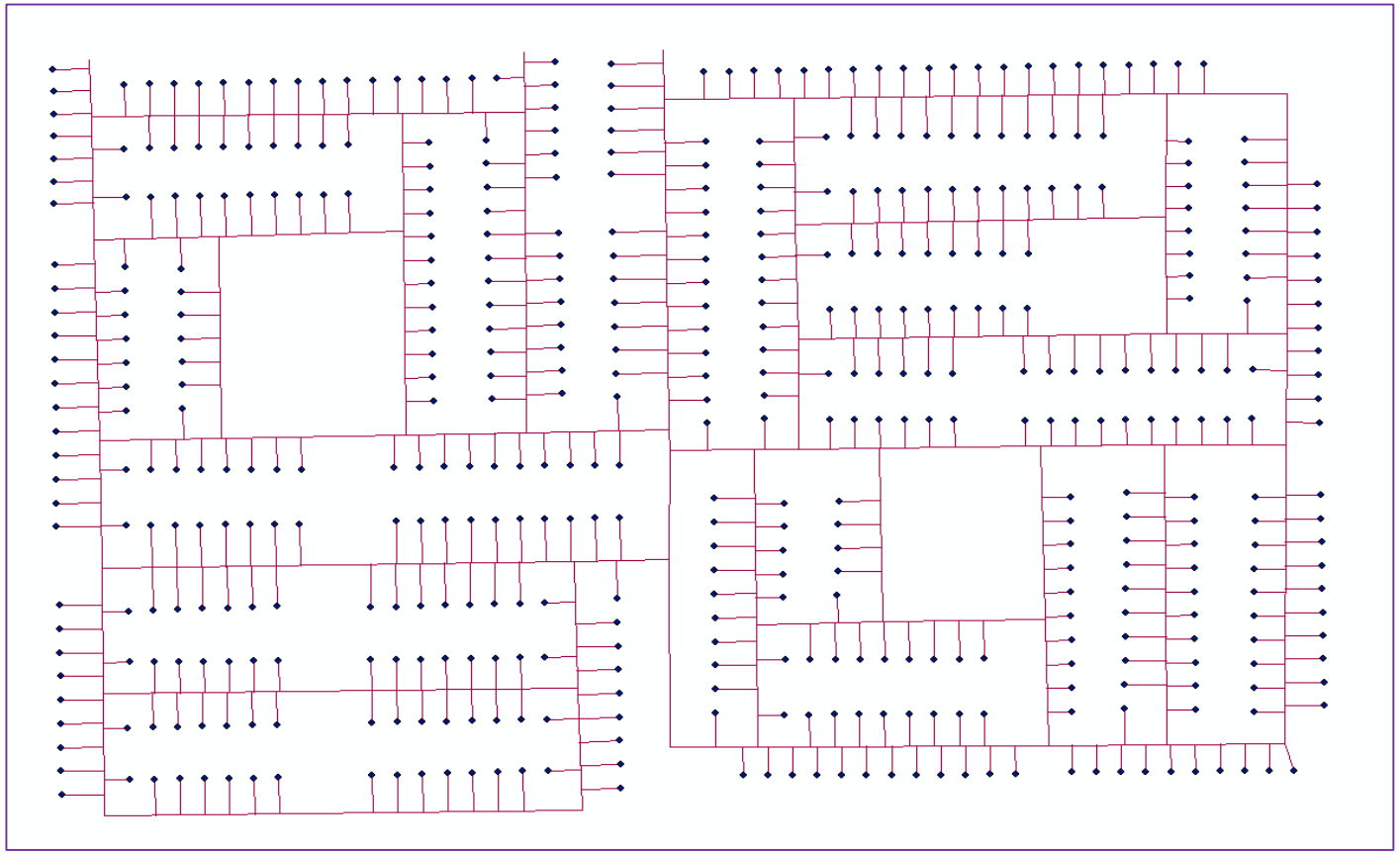
Concepts & Algorithms used

- K-Means Clustering
- Agnes Clustering
- Dijkstra’s Shortest Path
- Betweenness Centrality
- Kruskal Minimum Spanning Tree
- Travelling Salesman Problem(TSP)
- Graph Theory

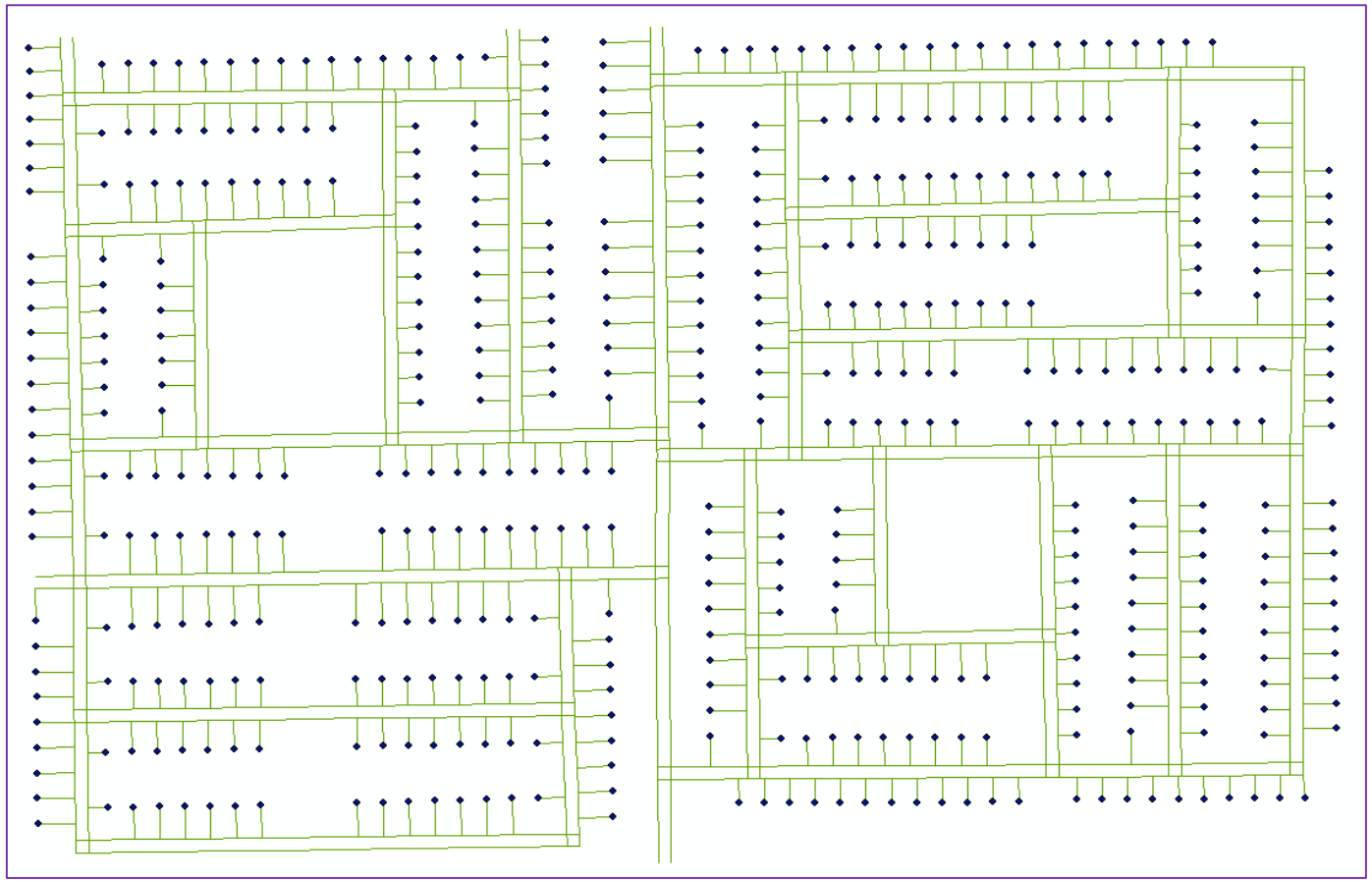
Input - Demand & Road center Lines



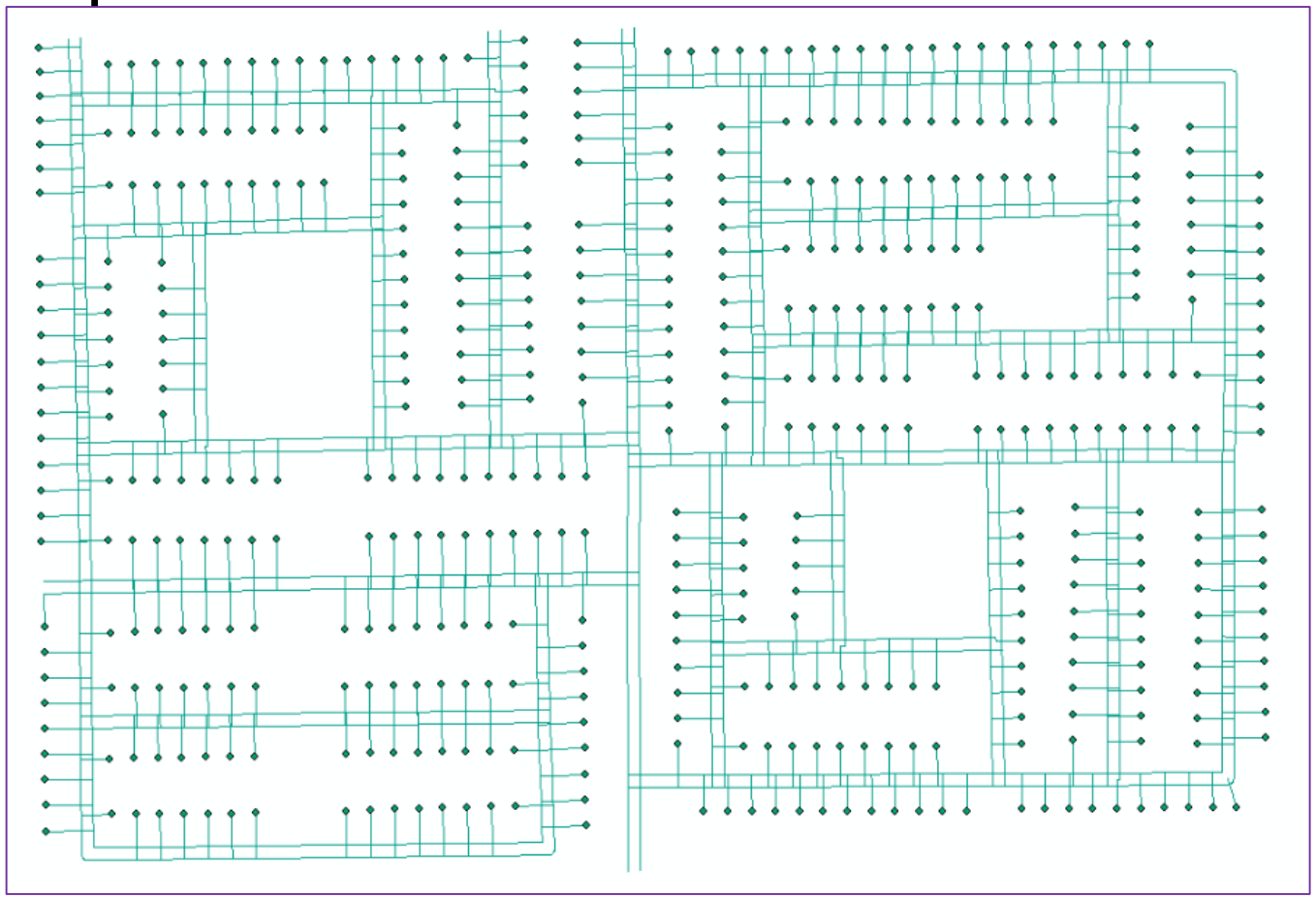
Step-1 : Generate route lines Option-1



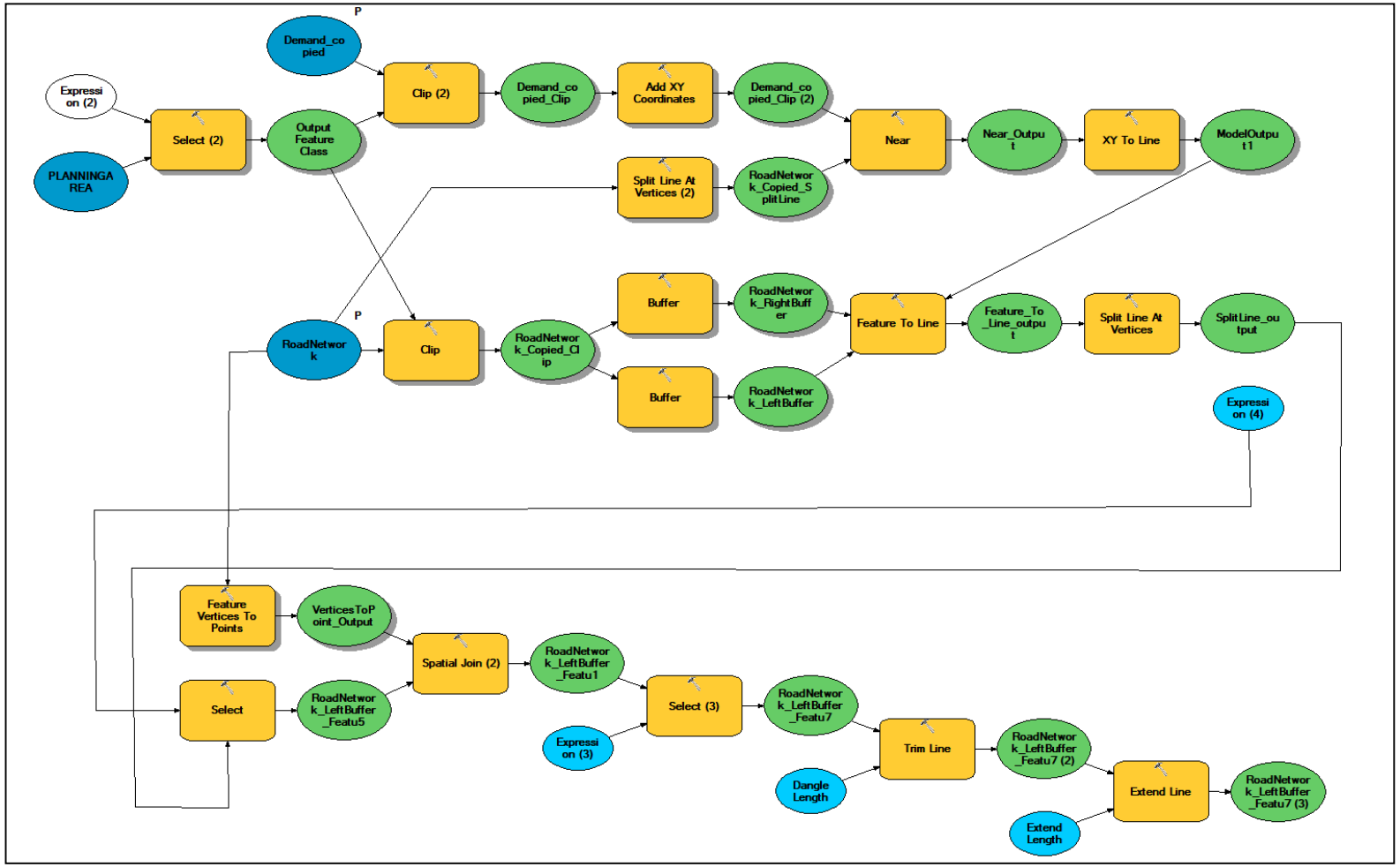
Step-1 : Generate route lines Option-2



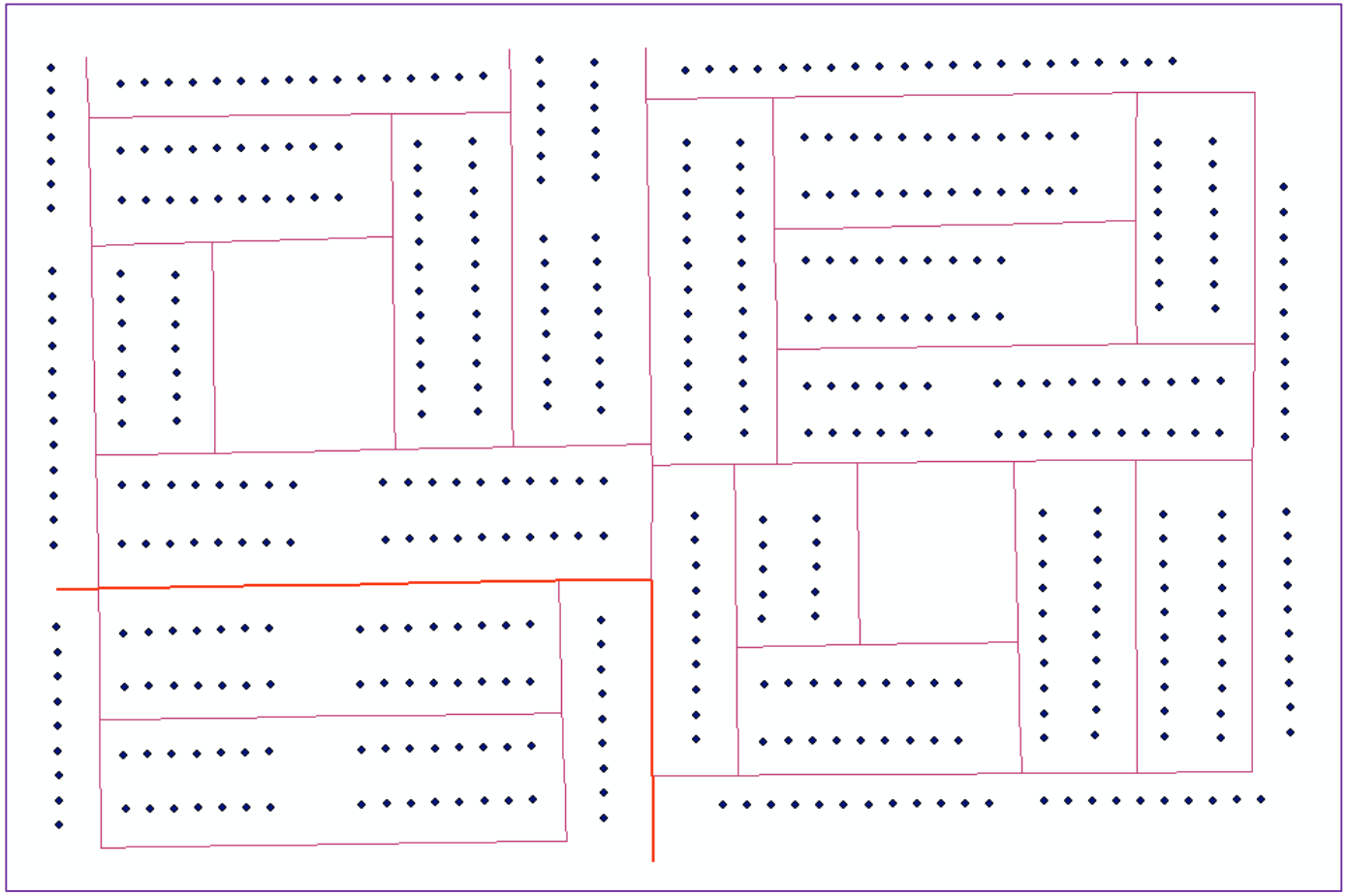
Step-1 : Generate route lines Option-3



Step-1 : ArcGIS Model for Route Lines



Step-2 : Road Crossing Cost Factor



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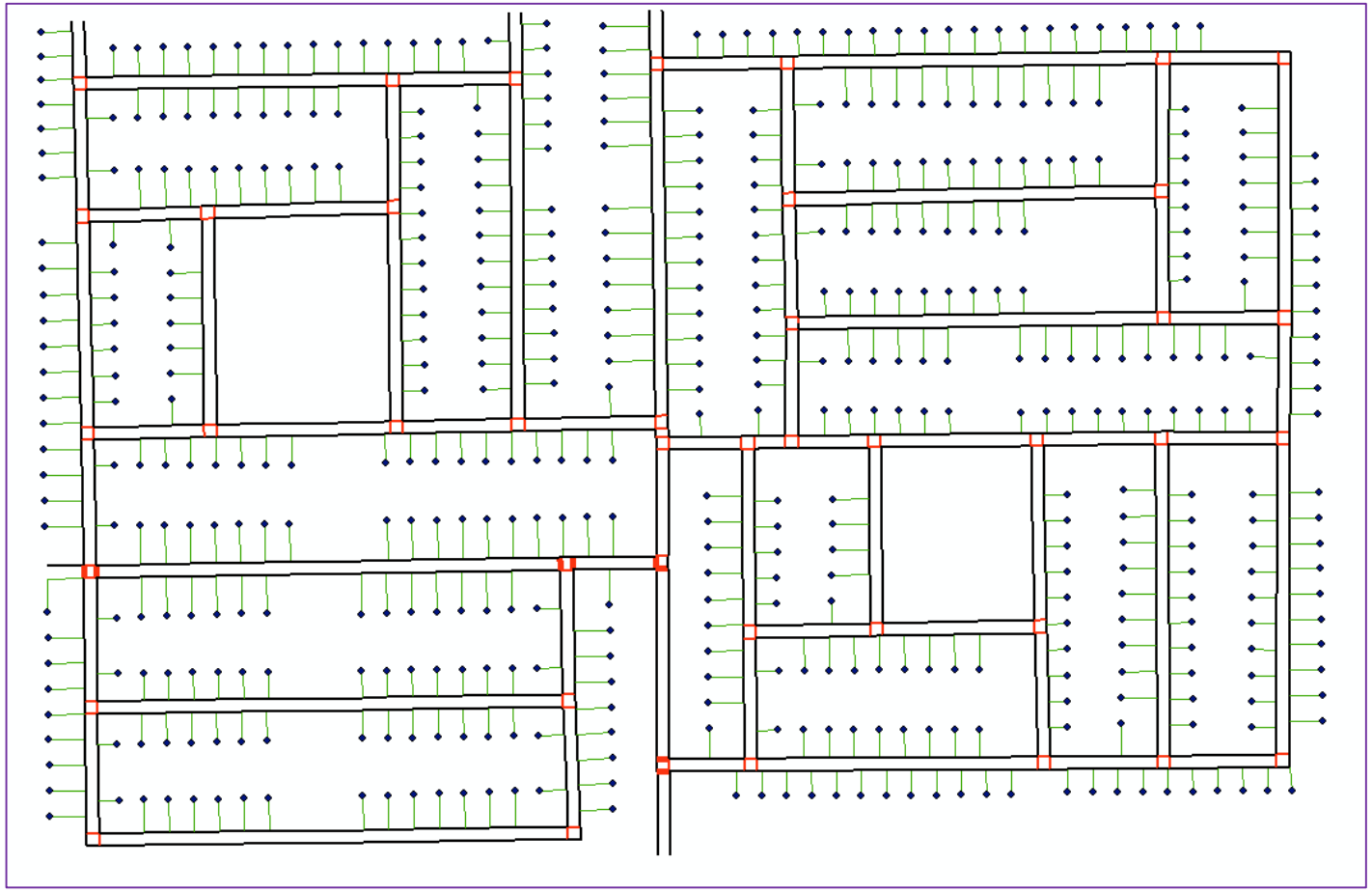
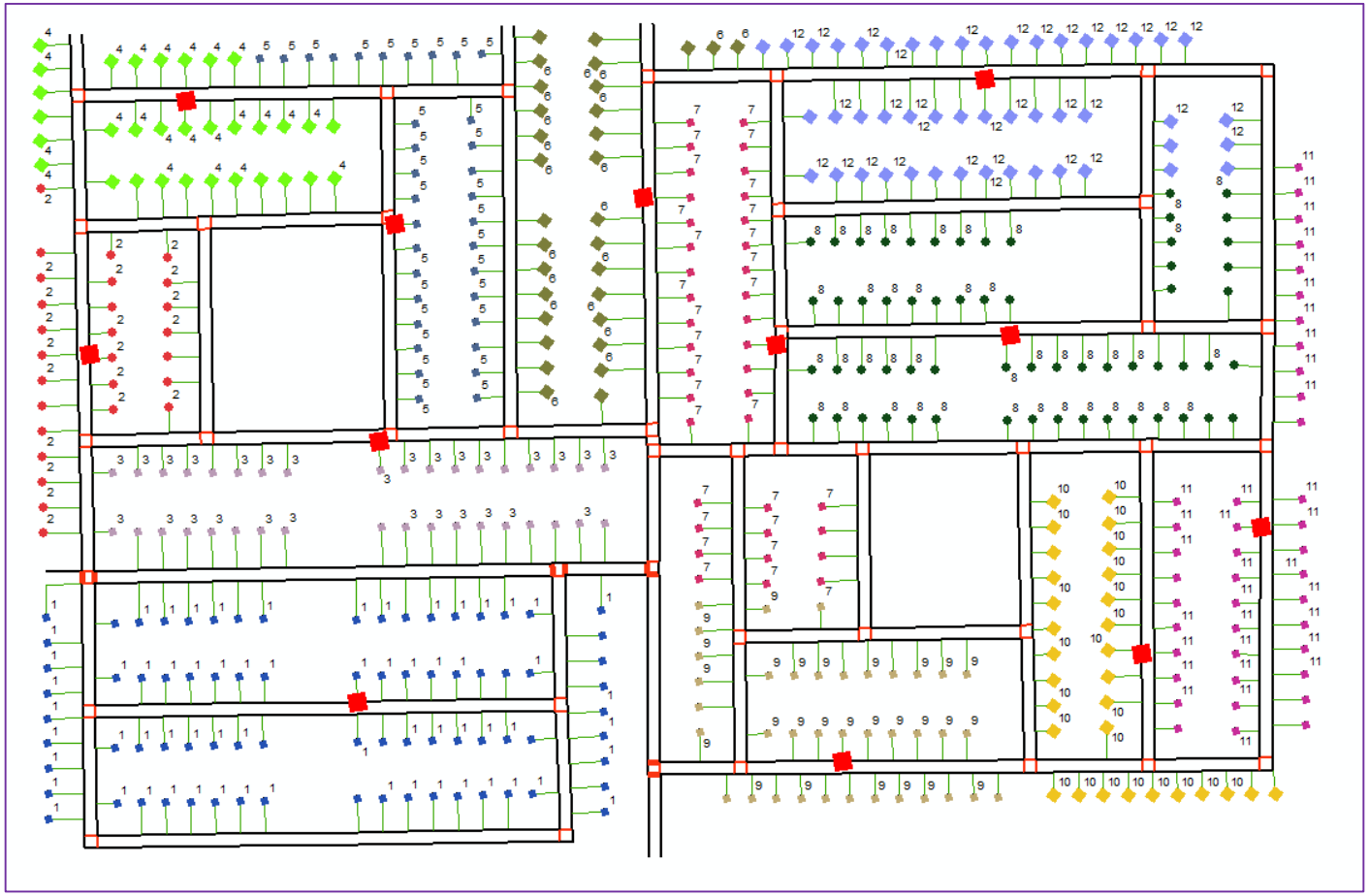
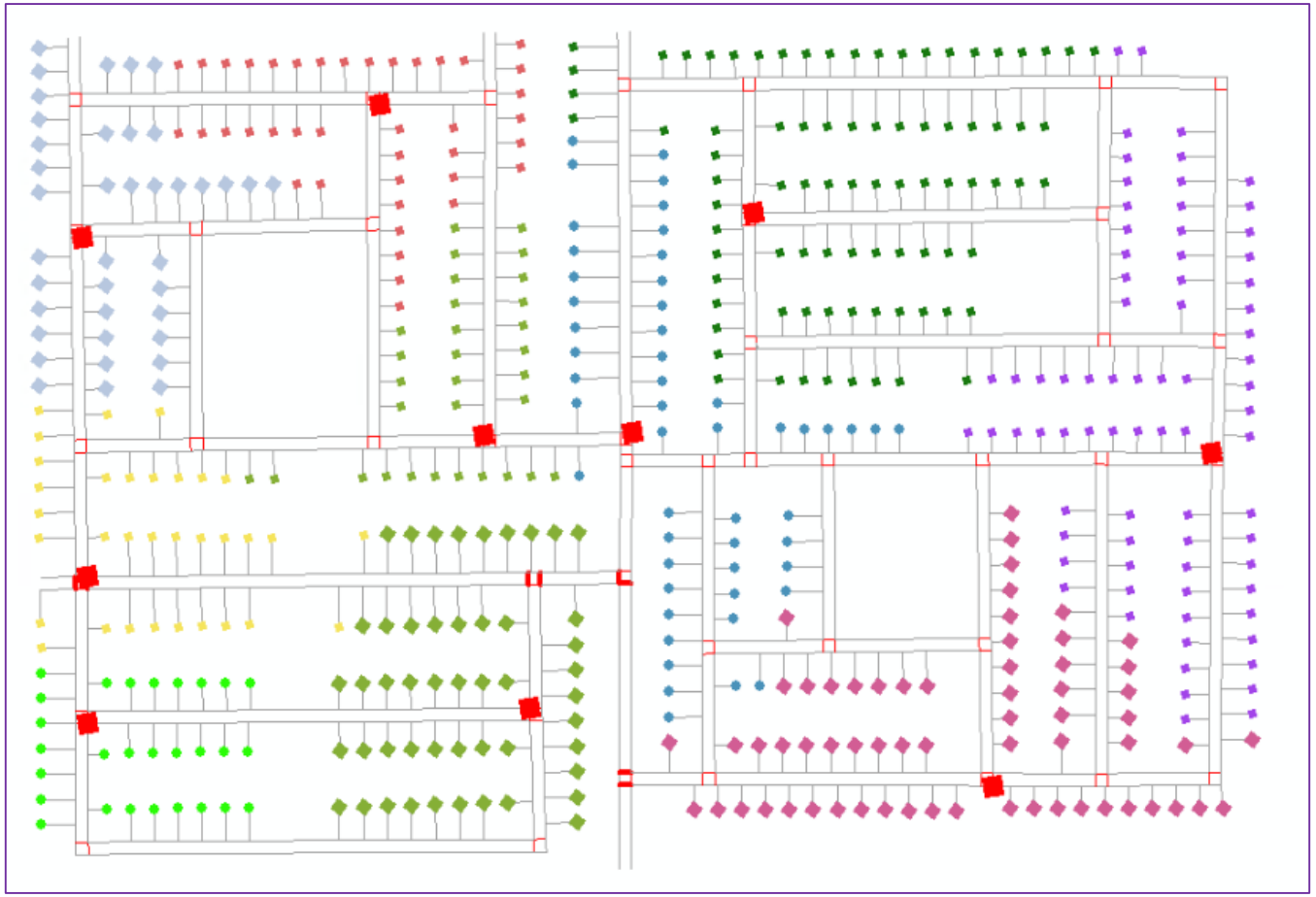


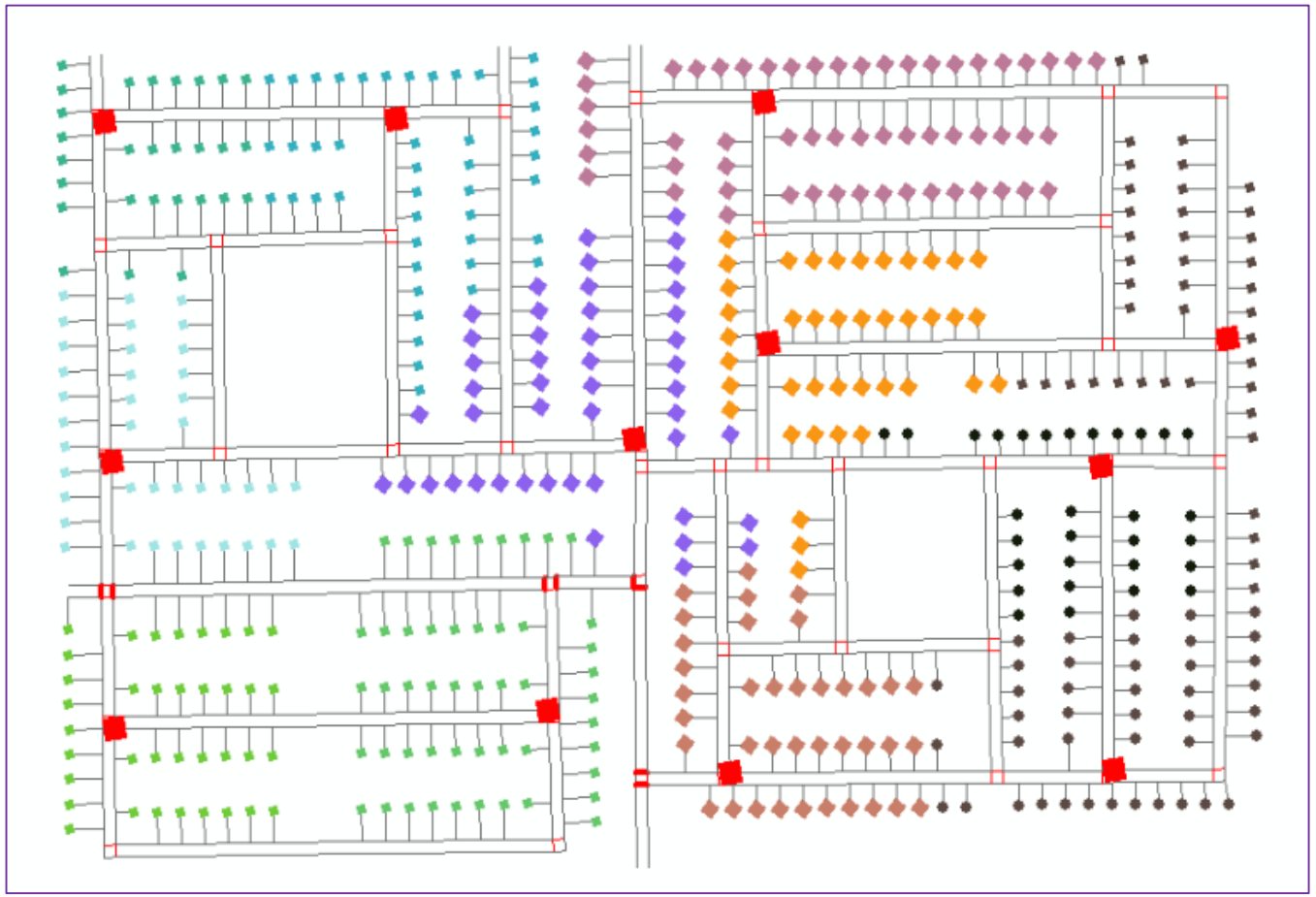
Step-3 : K Means Clustering of the Demand



Step-3 : Clustering of the Demand



Step-3 :Clustering-Agnes Hierarchy Initial Centroids



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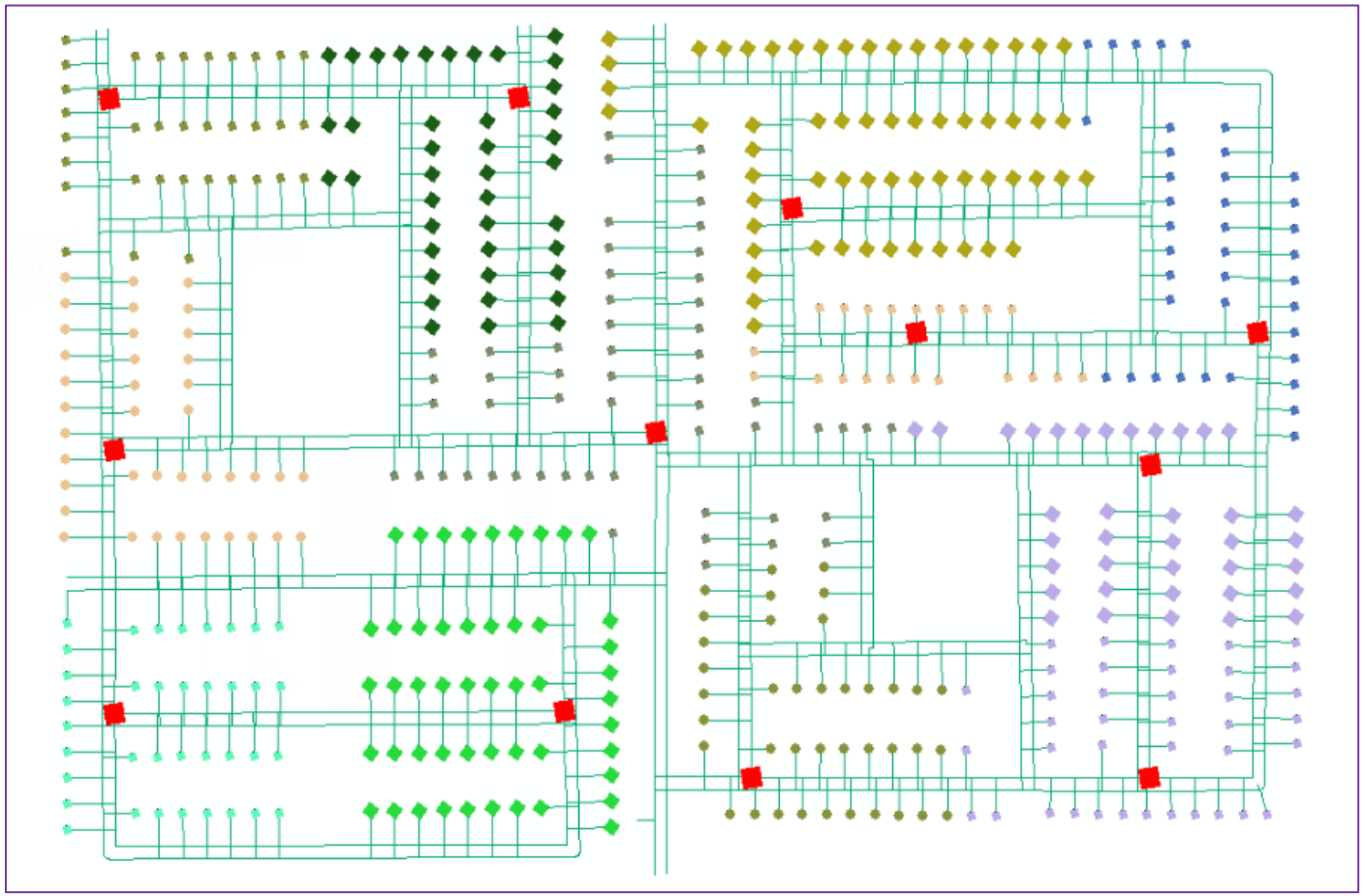
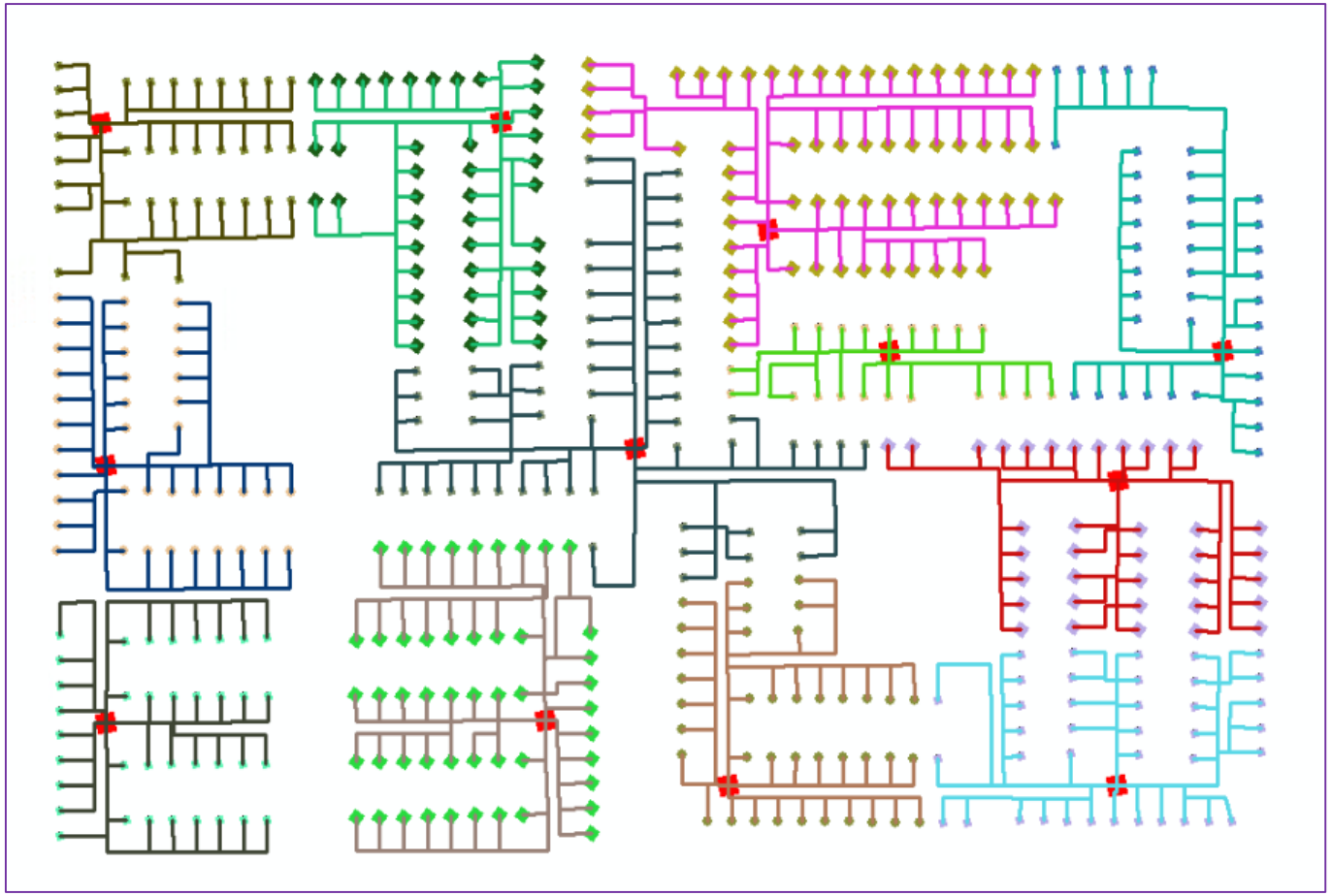
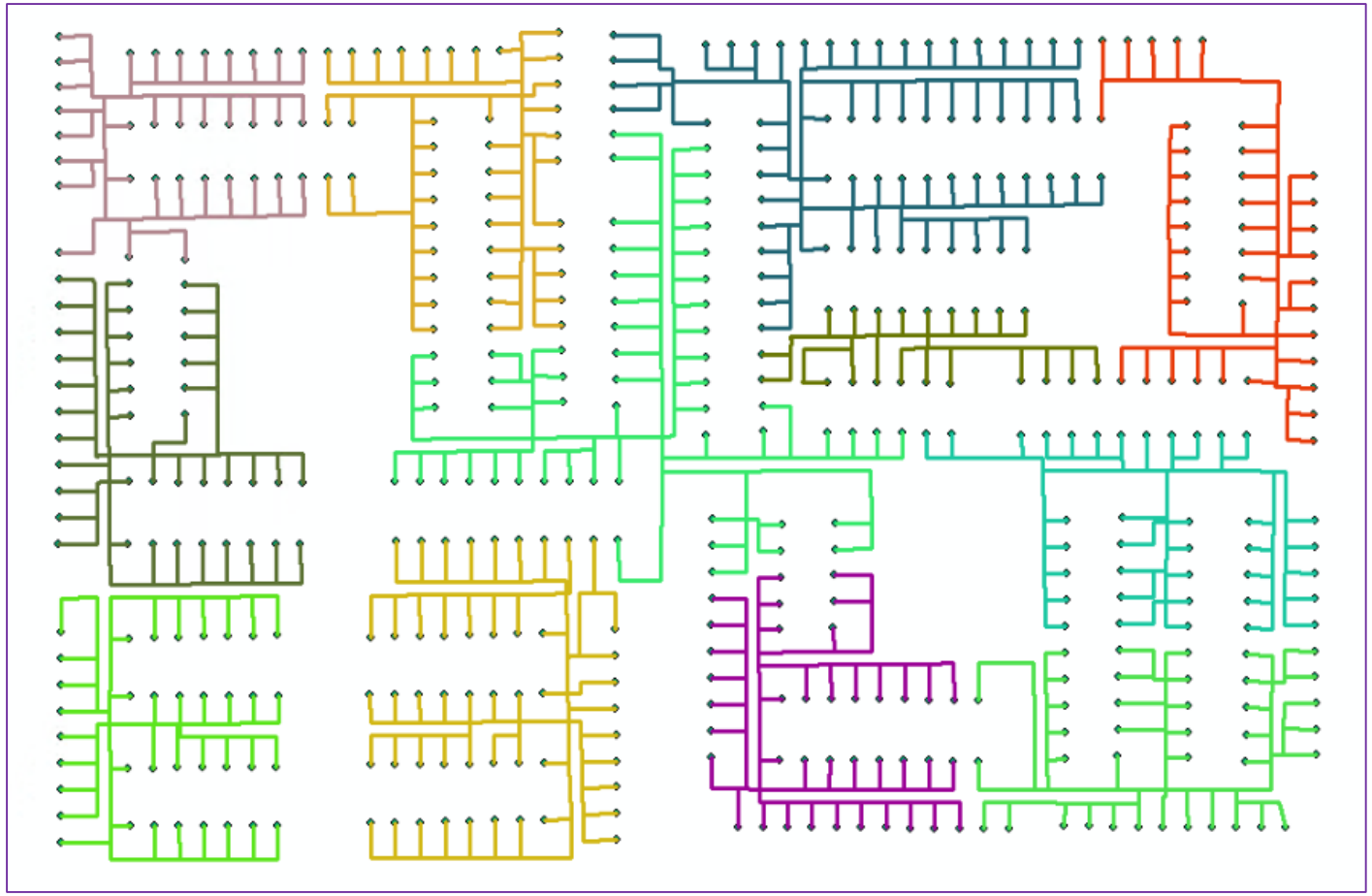


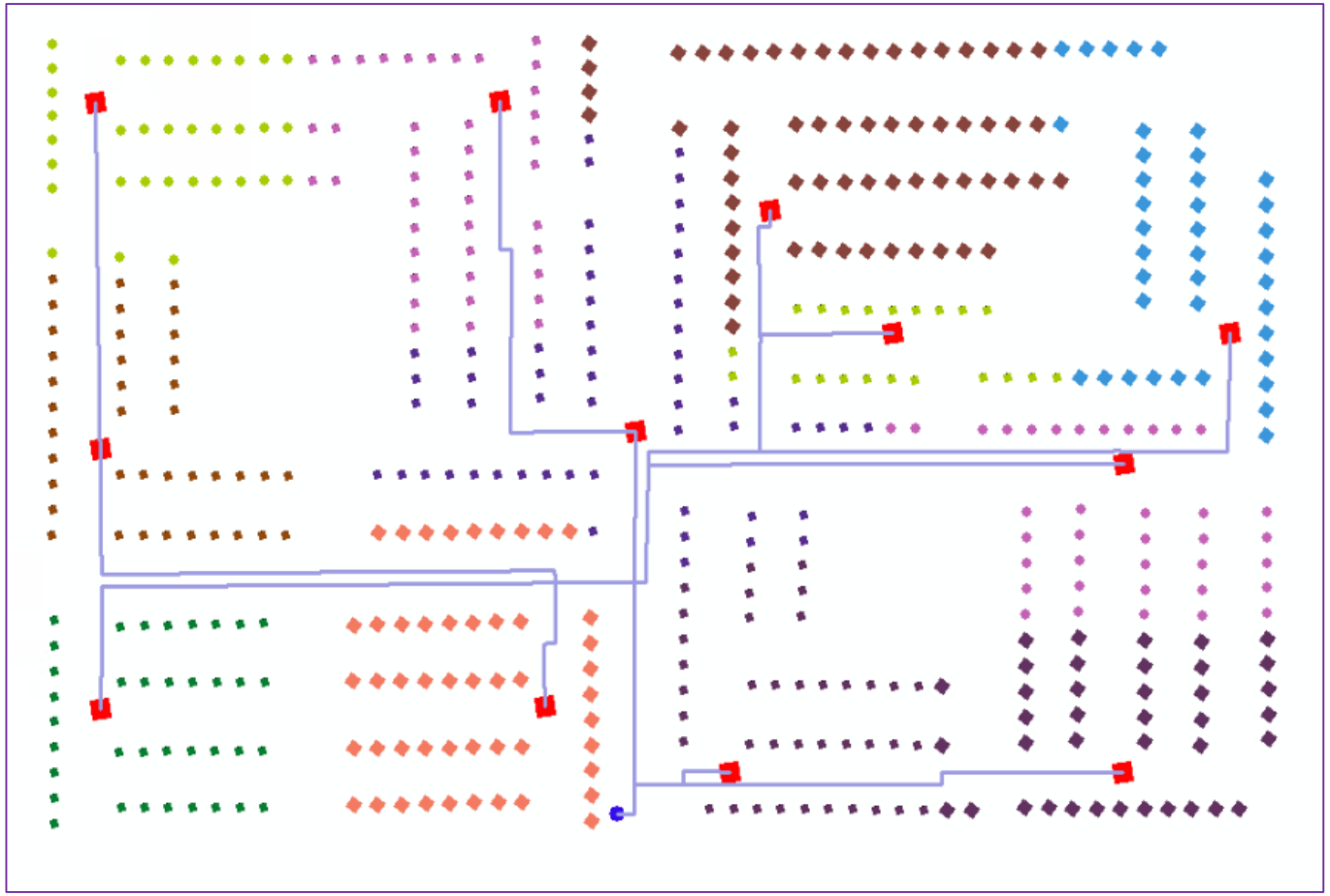
Step-4 :Distribution & Drop Network



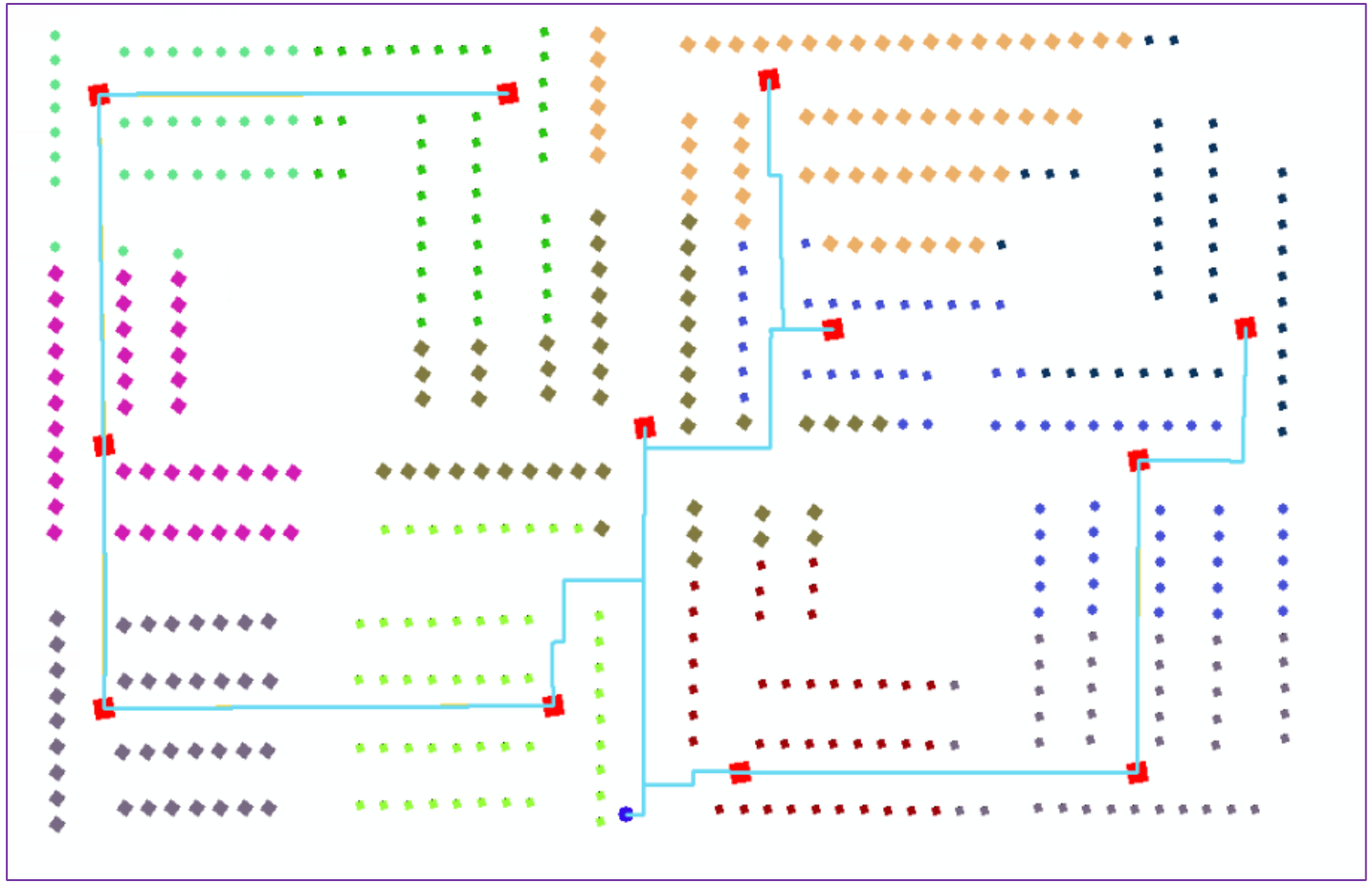
Step-4 : Distribution & Drop Network



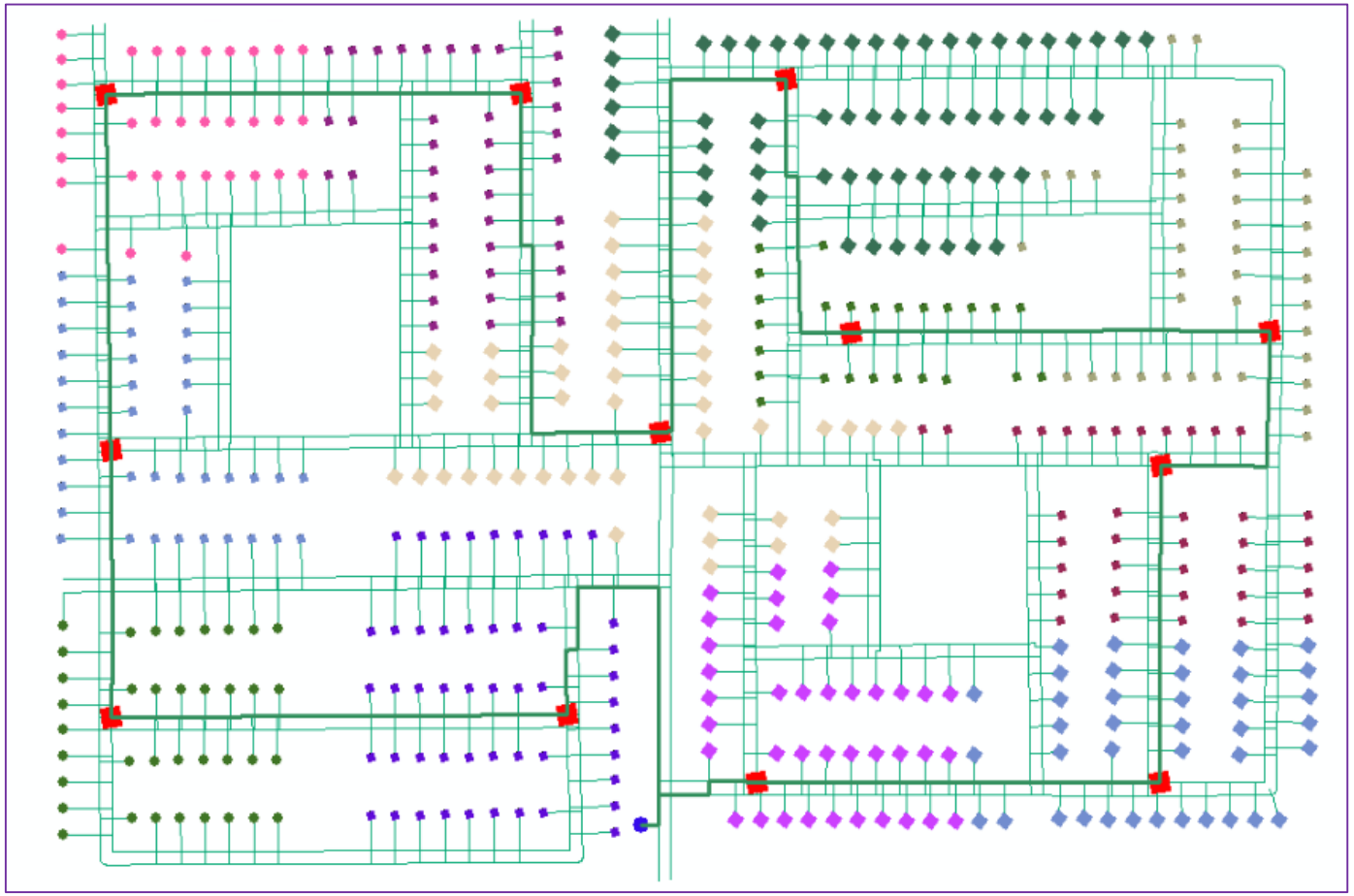
Step-5 :Feeder Network



Step-5: Feeder Network



Step-5: Feeder Network



Summary

- Agnes Clustering - Initial clusters
- Betweenness Centrality - initial cluster centroids
- K-Means Clustering - for clusters
- Dijkstra’s Shortest Path - shortest path between the nodes
- Betweenness Centrality - for final centroids
- Kruskal Minimum Spanning Tree - drop and feeder routes
- Travelling Salesman Problem(TSP) - feeder route
- Graph Theory

Demo

Q and A