# Connectivity Provisions

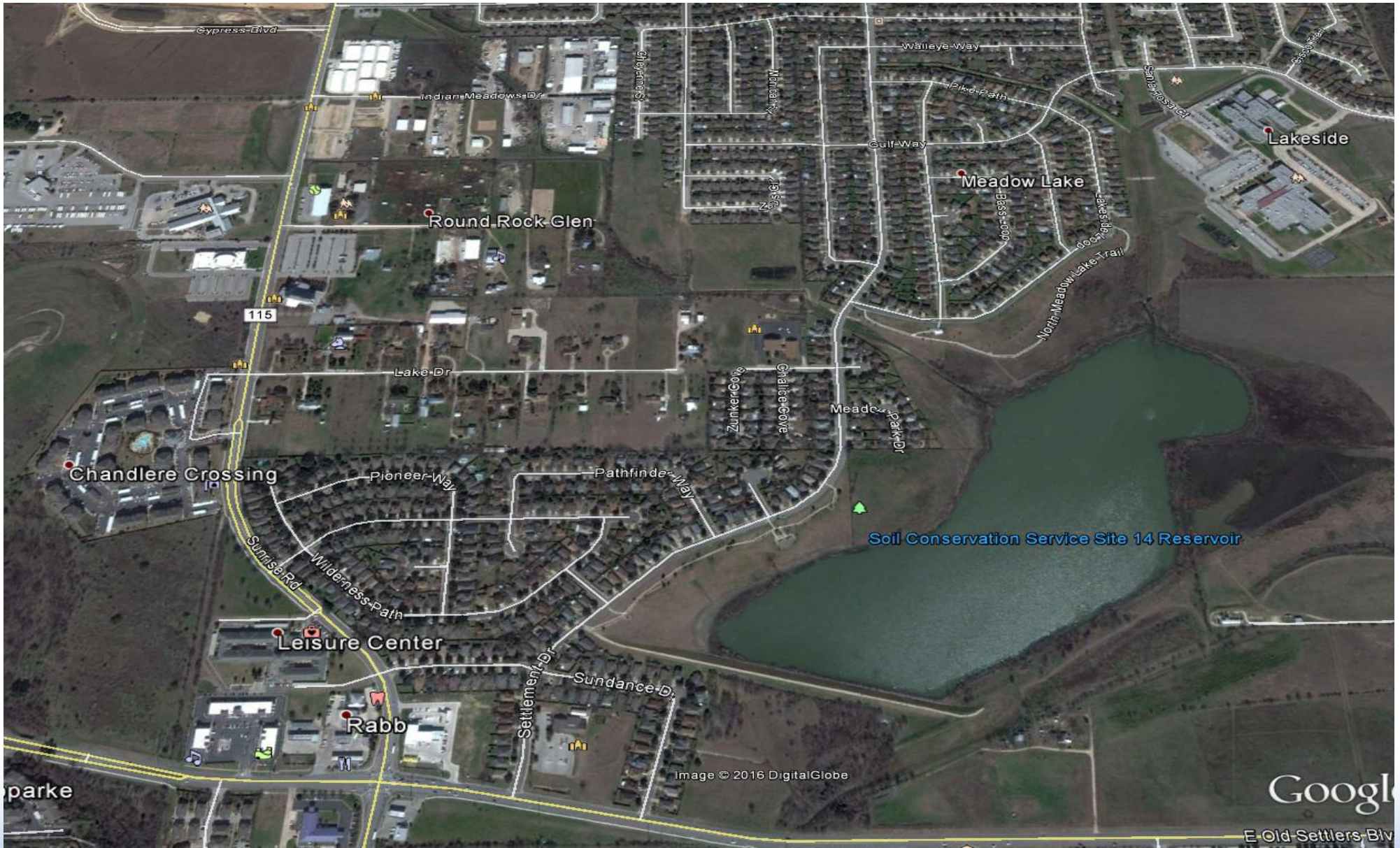
# Why connect our streets?

- Recent complaints about poorly-designed subdivisions funneling all of their local traffic onto a single or very few collector streets, resulting in unsafe or undesirable conditions for residents on collectors.
- Desire to create closer-knit neighborhoods with greater walkability
- As a land use regulation, street connectivity has a direct nexus to improving the health, safety, and general welfare of the public

# Applicability

- Only applies to new subdivisions which have not yet submitted a preliminary plat
- Not retroactive

# Why connect our streets?



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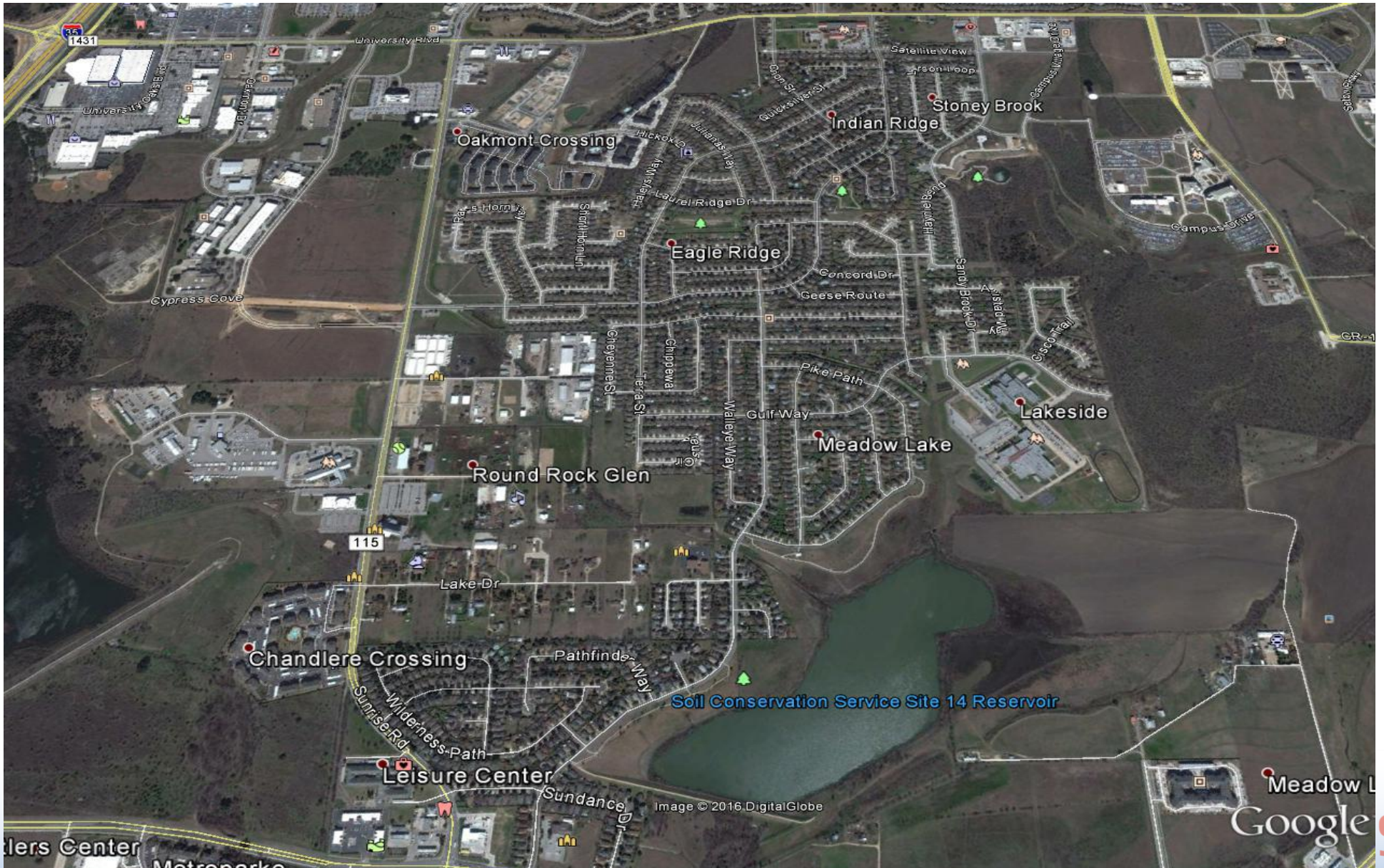

# Why connect our streets?

- Reduction in travel distance (VMT) and travel times for drivers
- Less burden on collector and arterial streets
- Higher percentage mode share for bicycling and walking
- Better and more efficient emergency vehicle access
- More efficient public services access (mail, garbage, etc.)

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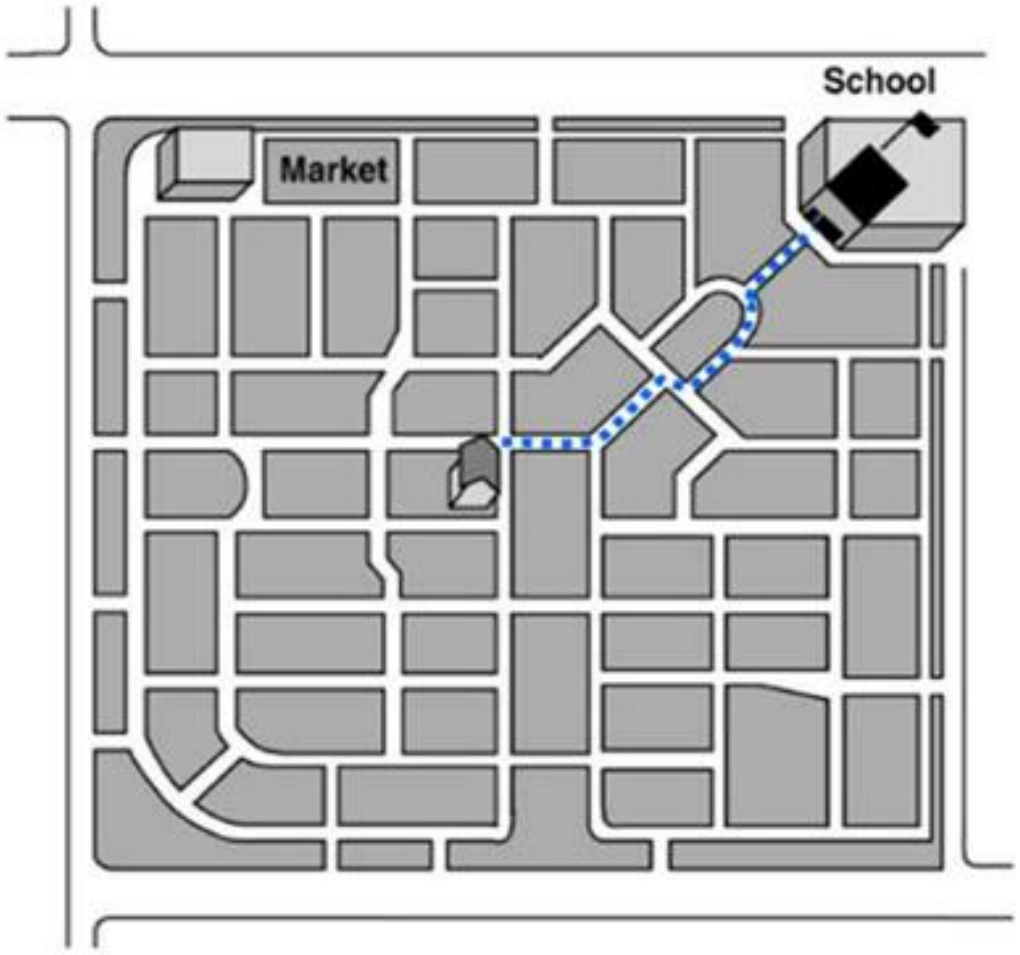
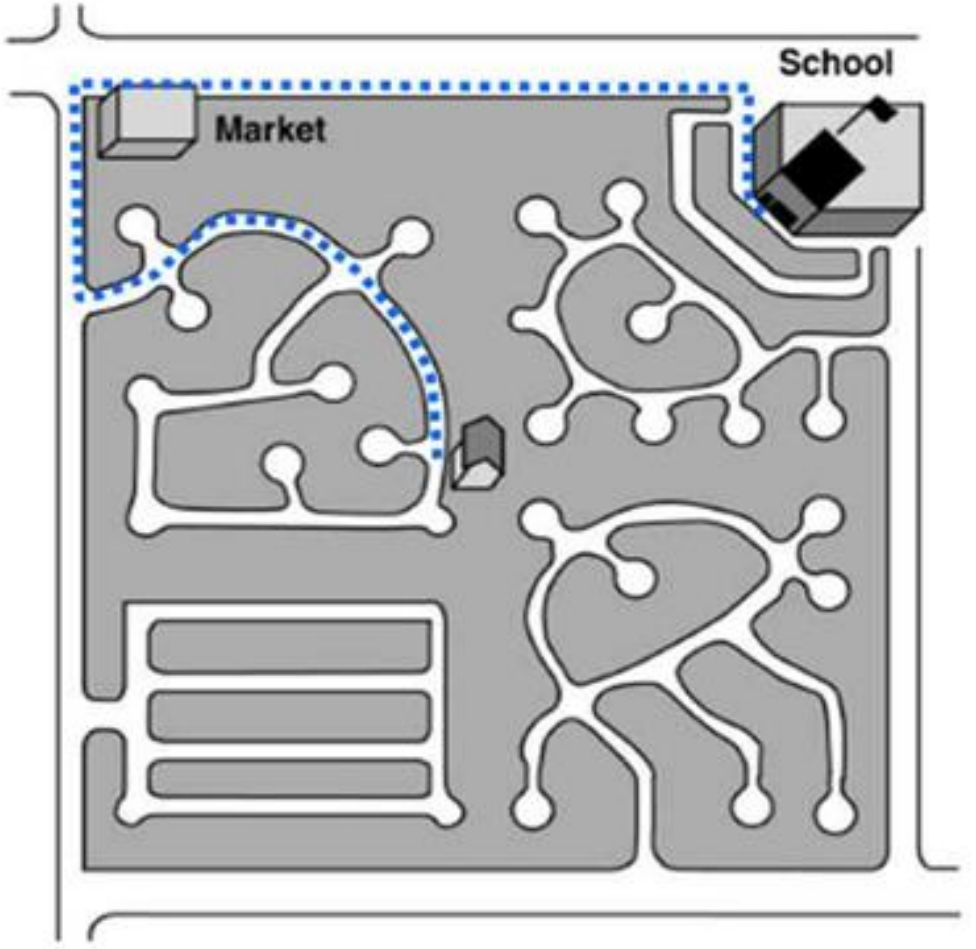


# How do we enforce Connectivity?

## Connectivity Ratio

- A ratio used to determine the connectivity in a neighborhood by dividing the number of links by the number of nodes in a network
- Node: Any intersection of any two segments, culs-de-sac, or permanent turnarounds, such as dead end streets
- Links: connections between nodes
- Connectivity = links/nodes

# What is a node?

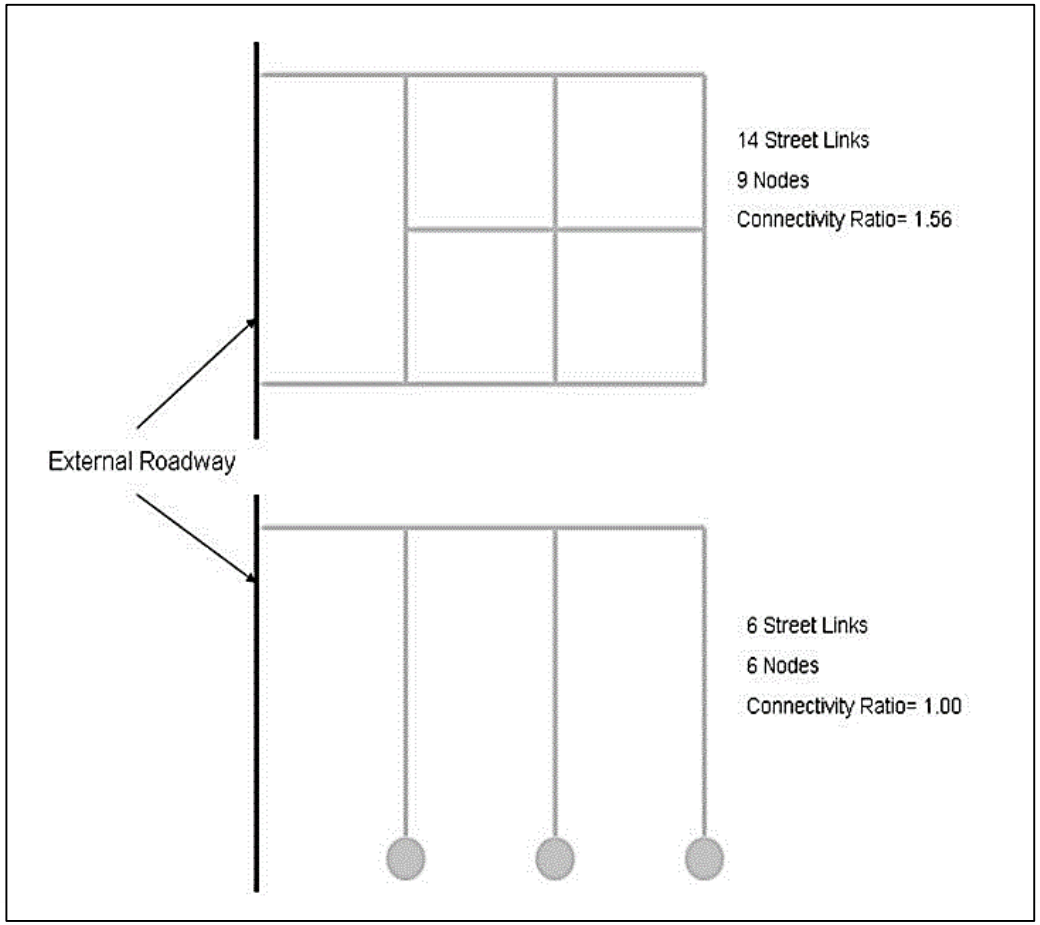
A node is the terminus of a street or the intersection of two or more streets.

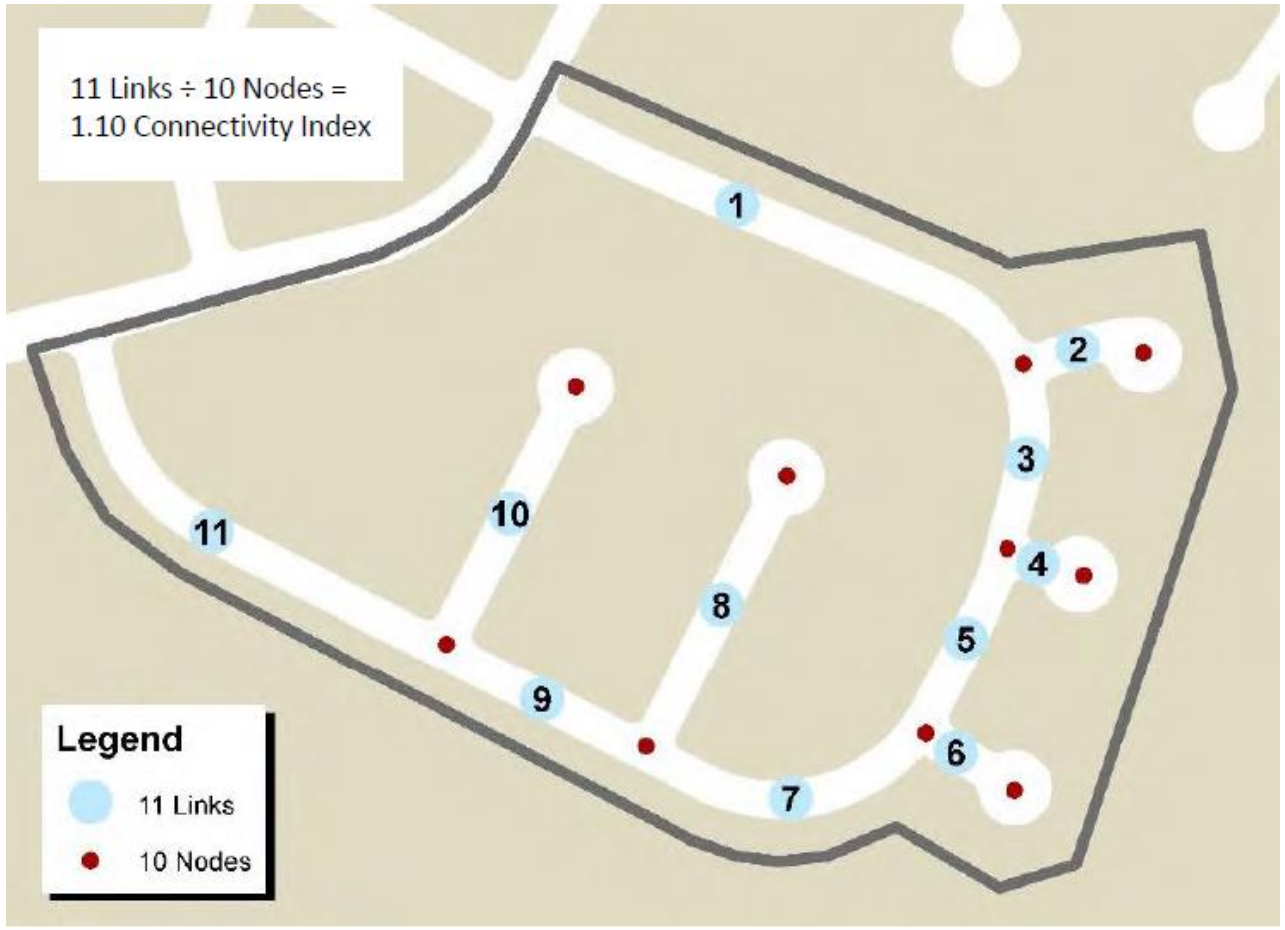
- Any location where a street name changes shall be considered a node.
- Any location where a street T-intersects with another street of any classification shall be considered a node.
- Any curve or bend of a street that exceeds 75 degrees shall receive credit as a node.
- Any curve or bend of a street that does not exceed 75 degrees shall not be considered a node.

# Connectivity Ratios

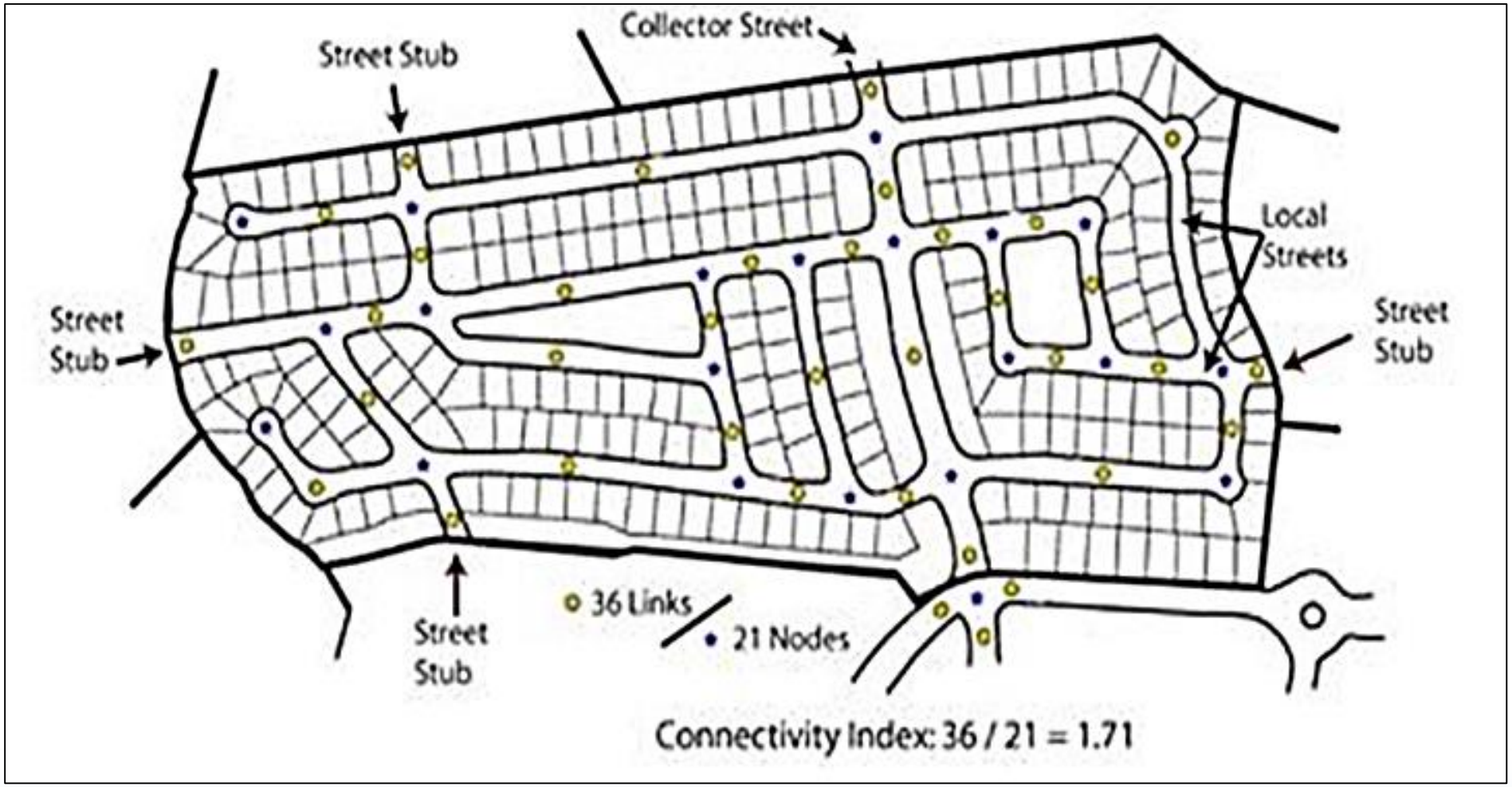
- Connectivity Index value range is between 1 and 2.5
- Value of 2.5 indicates perfect street grid
- Value of 1 is a tree network, or completely disconnected network
- A connectivity ratio of 1.4 or greater is widely considered to be well connected in both planning and transportation literature. Anything less than that is considered not well-connected.
- 1.4 is also considered the base value for encouraging growth of walkable pedestrian communities.
- Connectivity analysis can be done on any network, not just vehicles
- Separate requirements for different transportation modes could prove to be very useful in creating connected communities

# Connectivity Ratio Examples



# Connectivity Ratio examples



# Round Rock Neighborhood Summary

- 35 neighborhoods evaluated
  - Selected for ease of measuring
  - Wide range of ages, sizes, and prices
- High of 1.80 (Remington Heights)
- Low of 1.10 (Oak Bluff Estates)
- Mean connectivity index of 1.36

# Round Rock Examples

Bent Tree

Links: 32
Nodes: 23
Connectivity Index = 1.39

# Round Rock Examples

Preserve at Dyer Creek

Links: 21
Nodes: 19
Connectivity Index = 1.11

# Round Rock Examples

Settlers Crossing

Links: 43
Nodes: 27
Connectivity Index = 1.59

# Other Tools to Achieve Connectivity

- Minimum numbers of connections to outside streets, based on number of lots
- Minimum numbers of stub streets to adjacent vacant properties, also based on number of lots
- Language requiring connections to existing adjacent stub streets
- Restrictions on block length

# Other Cities with Connectivity Ratios

- Georgetown: 1.2 ratio required
- Hutto: 1.2 ratio required
- Mont Belvieu: 1.4 ratio required
- Buda: Proposing 1.6 ratio
- Rowlett: No ratio but minimum connections and block length maximums
- Pflugerville: Only connection to existing stub streets required

# Proposed Connectivity Requirements for Round Rock

- Roadway connectivity ratio of at least 1.35 for all new single family  or two family subdivisions
  - Pedestrian links must be added to achieve total connectivity ratio of 1.40
- Minimum number of connections to existing streets and stubs to adjacent vacant properties, based on number of lots proposed.
  - City currently has requirement for two points of access for more than 29 residential lots (based on fire code)
- Block length limit with requirement for mid-point pedestrian access path on the longest blocks built

# Proposed External Connection Requirements

- Less than 75 lots: 1 connection to public road, 1 stub to vacant property where feasible
- Between 75 lots and 149 lots: 2 connections to public road, 1 stub to vacant property
- Between 150 lots and 299 lots: 3 connections to public road, 2 stubs to vacant property
- 1 additional connection to a public road and 1 stub to vacant property for every additional 200 lots over 300
- One stub may substitute for one road connection requirement.

# Block Length/Pedestrian Connections

- Block lengths shall not exceed 1000’ without P&Z approval
- Where blocks exceed 1000’, there shall be a pedestrian access easement, greenbelt, or similar feature placed mid-block.
- 600’ cul-de-sac length limit (based on fire code)

# Proposed Connectivity Process

- Applicant would include connectivity analysis for proposed subdivision in Preliminary Plat phase for new SF or TF subdivisions
- Applicant may deviate from some connectivity requirements depending on site conditions and if approved by P&Z:
  - Natural features (monarch trees, bodies of water, bluffs, karst features)
  - Cultural features (historic landmarks, burial grounds)
  - Incompatible adjacent uses (industrial, rail lines)
  - Infill lots without ability to connect to other subdivisions or roads
  - Driveway and intersection separation standards
- Staff would include in recommendation to P&Z whether or not the site's constraints legitimately prevent strict compliance with connectivity requirements