PRINCETON COMMUNITY TRAFFIC STUDY

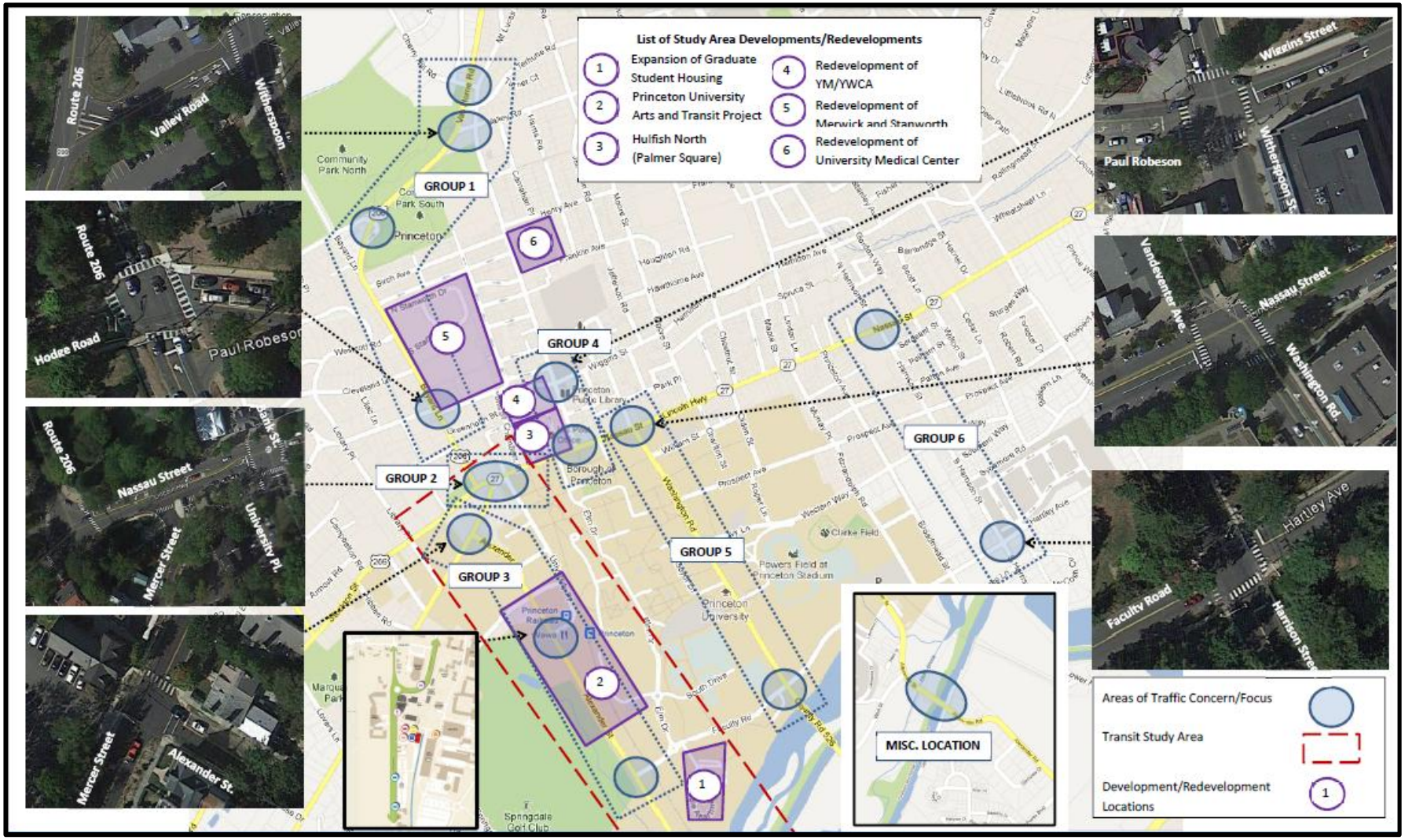
Task Force Meeting # 3

Wednesday, June 19th, 2013

AECOM Agenda

- Overview of Modeling Scenarios
- Basic Feasibility Screening for Scenarios
- Preliminary Traffic Model Findings for Scenarios
- Discussion & Task Force Recommendation for Preferred Package
- Next Steps

Locations of Proposed Developments



Overview of Modeling Scenarios

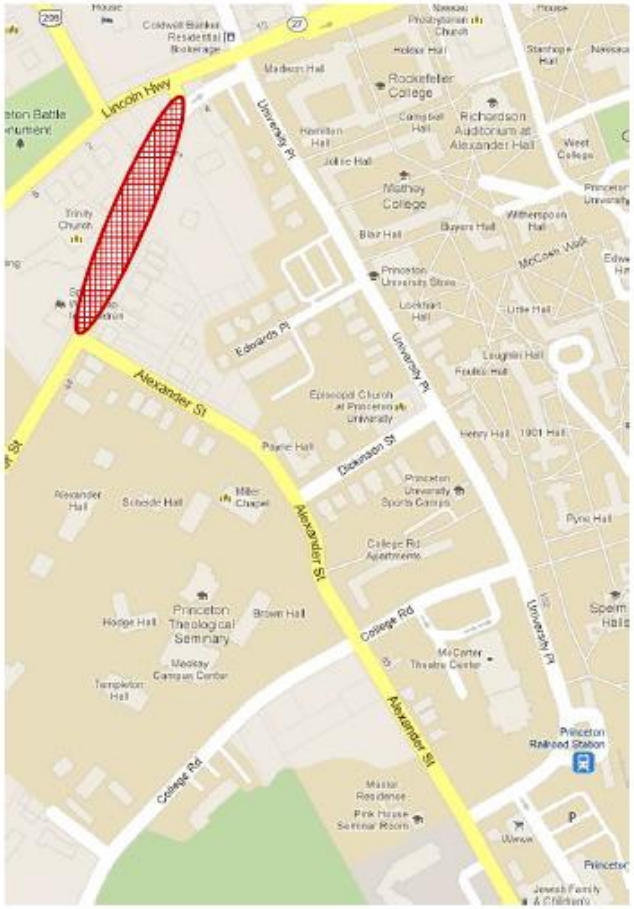
Modeled Scenario =	Base Model +	Network Updates +	Land Use Updates
1. 2012 Base Condition	2006 Base Model	• Available 2012 Traffic Count Data • Any roadway improvement projects completed since 2006	• Relocation of the University Medical Center
2. 2027 No-Build Condition	2012 Base Condition	• Roadway improvements related to the Princeton University Arts and Transit Project	• All new developments/redevelopments identified in the RFP o Expansion of Graduate Hosing (Hibben-Magie) o Princeton University Arts and Transit Project o Hulfish North (Palmer Square) Redevelopment o Redevelopment of YM/YWCA o Redevelopment of Merwick and Stanworth o Redevelopment of University Medical Center
3. Improvement Package 1: Street Closures	2027 No-Build Condition	• Mercer Street closed in both directions between Alexander Street and Nassau Street • Witherspoon Street closed in both directions between Nassau Street and Spring Street • Left turn from Nassau Street onto Bank Street prohibited	• None: same as in 2027 No-Build Condition
4. Improvement Package 2: One-way Loop in Clockwise Direction	2027 No-Build Condition	• Mercer Street one-way in eastbound direction from Alexander Street to Nassau Street • University Place one-way in southbound direction from Nassau Street to Alexander Street • Alexander Street one-way in northbound direction from University Place to Mercer Street • Left turns from Nassau Street on to Bank Street prohibited • Witherspoon Street one-way in northbound direction from Nassau Street to Spring Street • Signal at Nassau Street and Witherspoon Street converted to pedestrian signal only	• None: same as in 2027 No-Build Condition
5. Improvement Package 3: One-way Loop in Counterclockwise Direction	2027 No-Build Condition	• Mercer Street one-way in westbound direction from Nassau Street to Alexander Street • University Place one-way in northbound direction from Alexander Street to Nassau Street • Alexander Street one-way in southbound direction from Mercer Street to University Place • Left turns from Nassau Street on to Bank Street prohibited • Witherspoon Street one-way in northbound direction from Nassau Street to Spring Street • Signal at Nassau Street and Witherspoon Street converted to pedestrian signal only	• None: same as in 2027 No-Build Condition
6. Stand-alone Improvement Run: Either Clockwise or Counterclockwise One-Way Loop	Either Improvement Package 2 or Improvement Package 3	• Same actions as in either Package 2 or Package 3 except: o Replace Witherspoon Street one-way conversion with current two-way operation o Fully functional traffic signal at Nassau Street and Witherspoon Street intersection	• None: same as in 2027 No-Build Condition

Basic Feasibility Screening

Improvement Package # 1

Improvement Package # 1 – Mercer Street Closure for Through Traffic

(Between Nassau Street and Alexander Street)



OPTION 1

OPTION 2

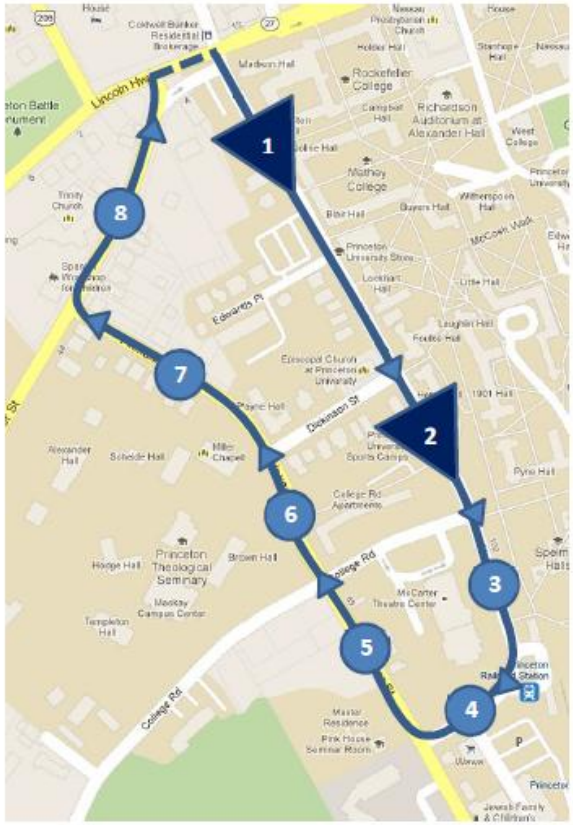
Improvement Package # 1 – Witherspoon Street Closure

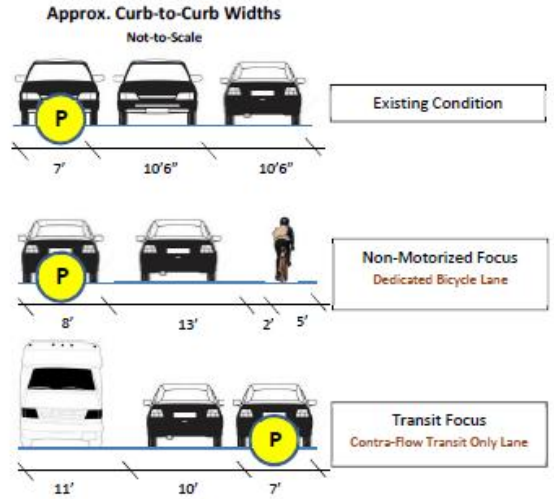
(Between Nassau Street and Spring Street)

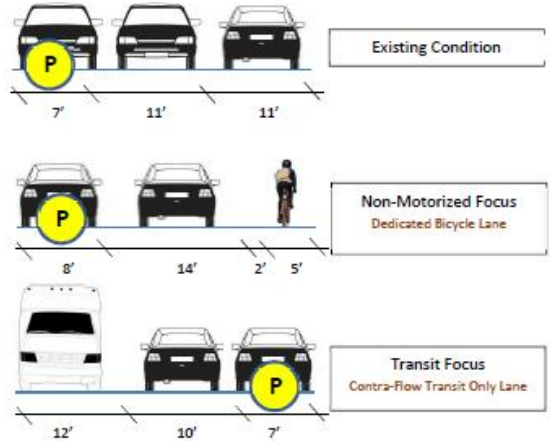
Basic Feasibility Screening

Improvement Package # 2

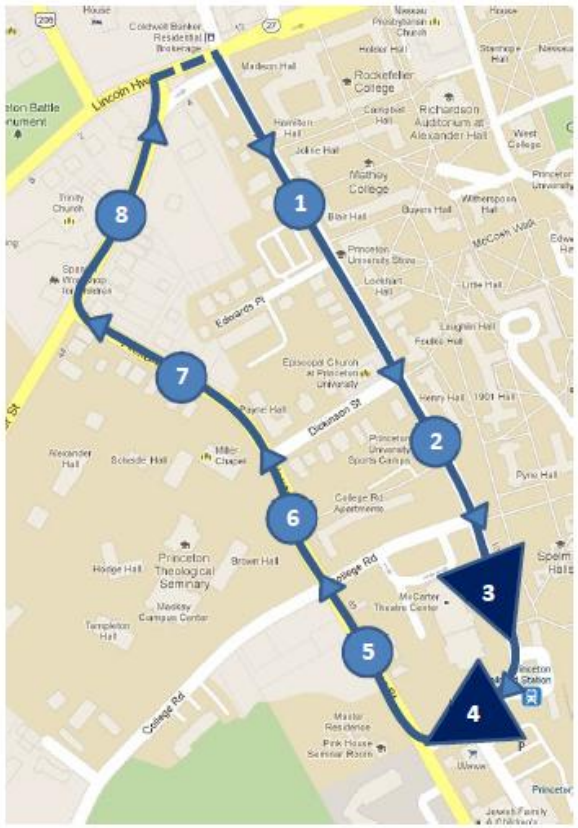
Improvement Package # 2 – Clockwise One-Way Loop

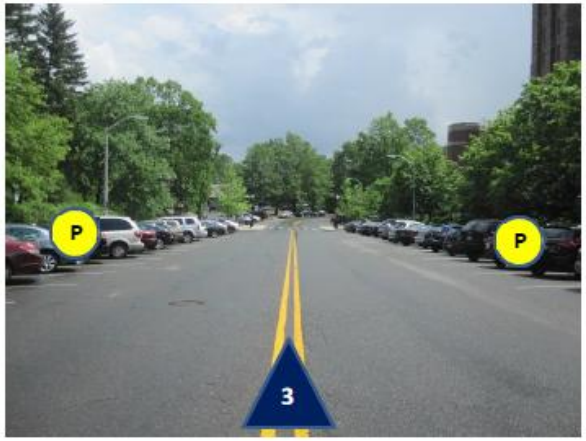


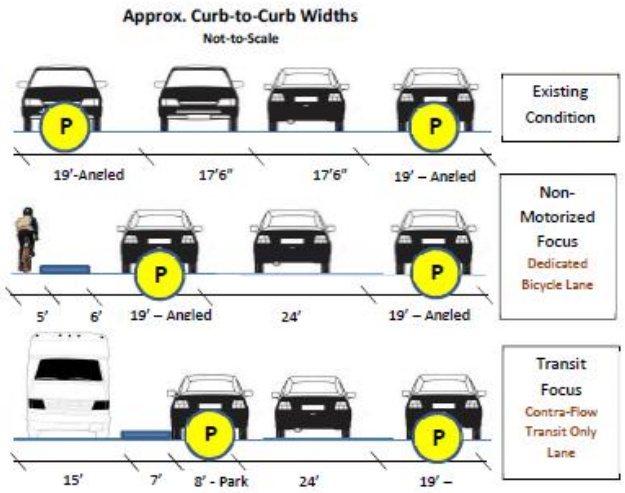


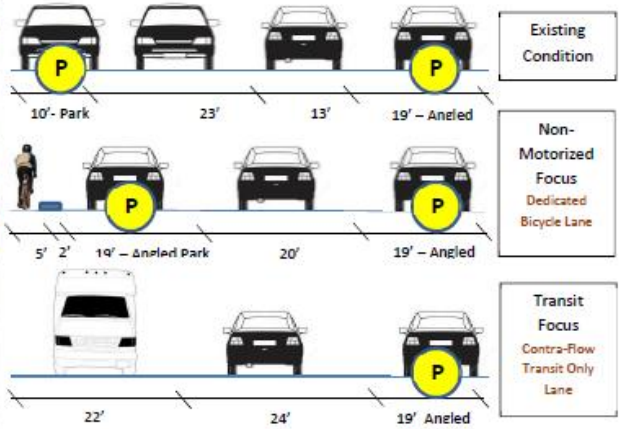


Improvement Package # 2 – Clockwise One-Way Loop

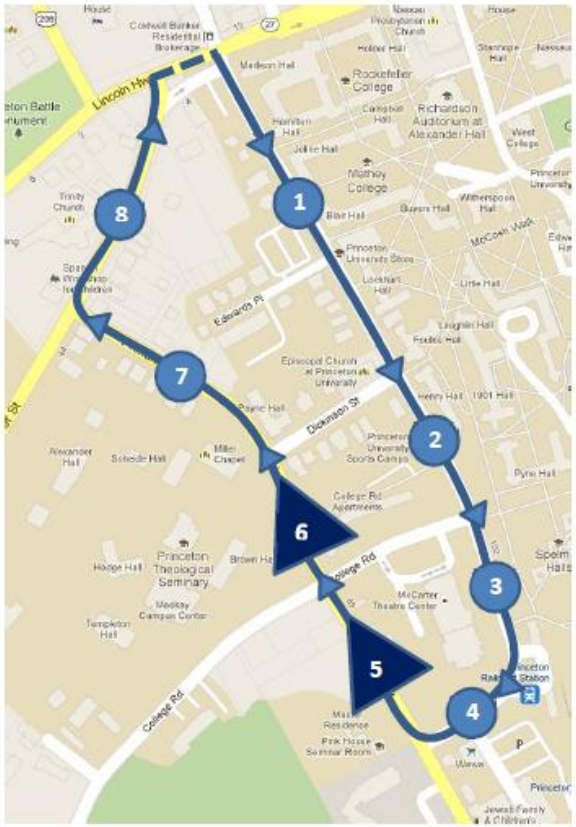


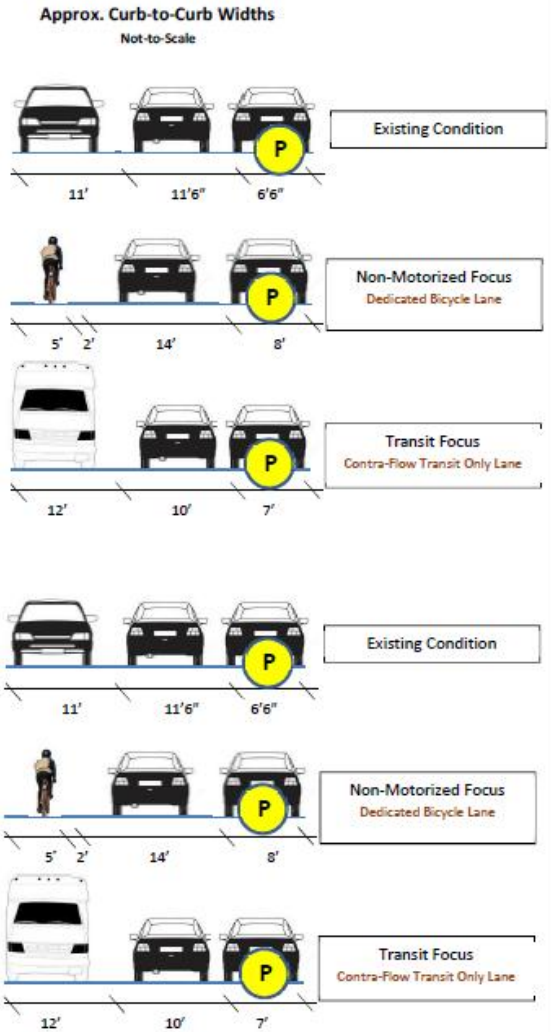




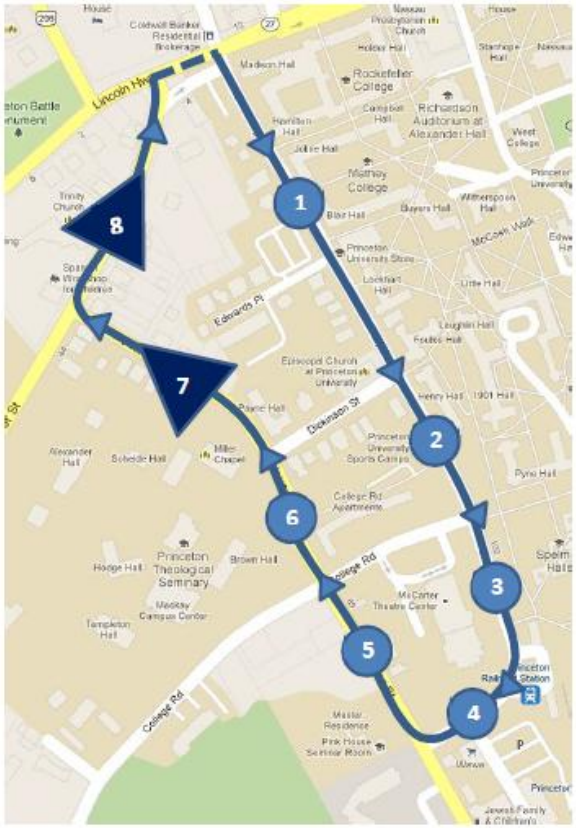


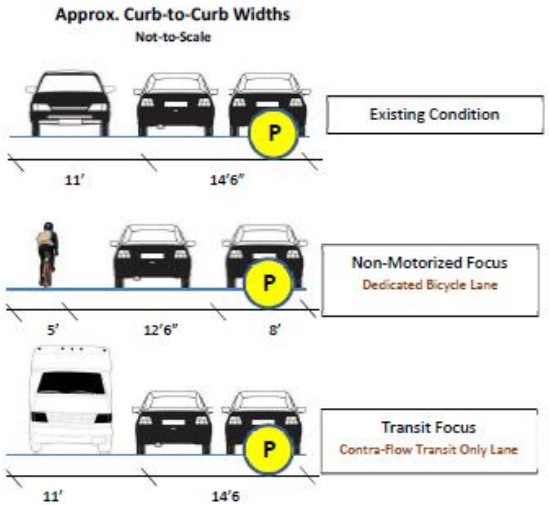
Improvement Package # 2 – Clockwise One-Way Loop

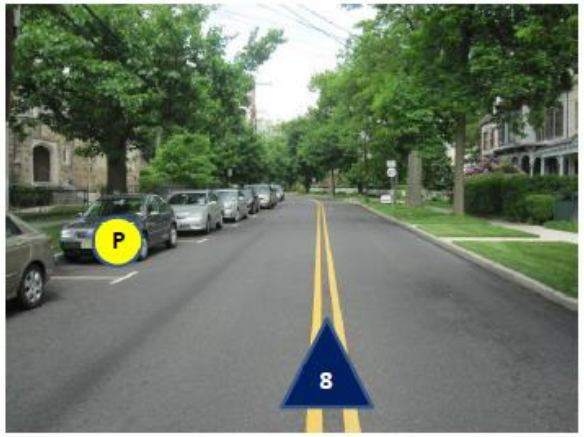


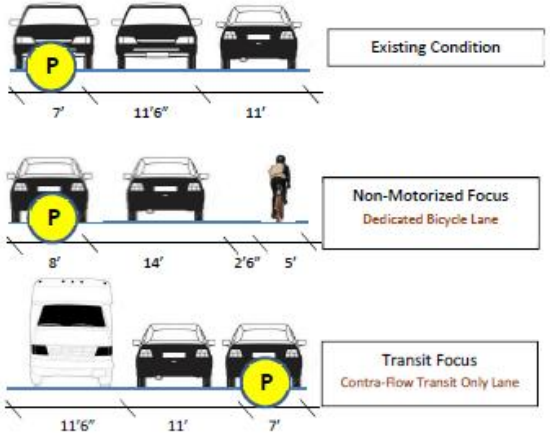


Improvement Package # 2 – Clockwise One-Way Loop

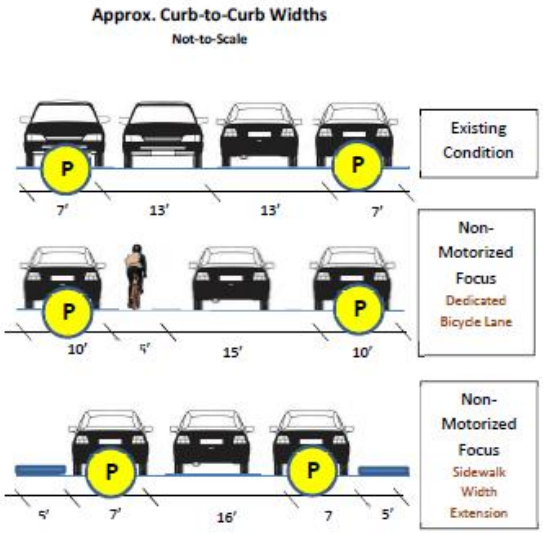








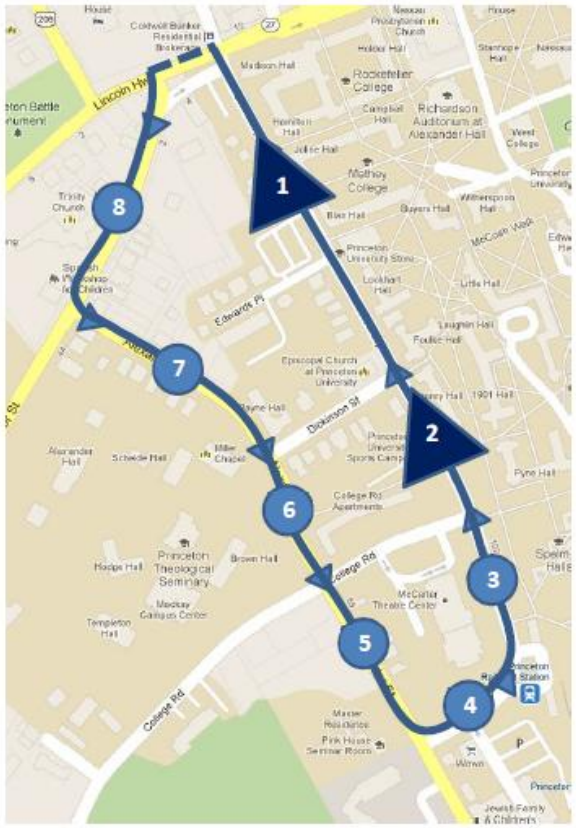
Improvement Package # 2 – Northbound One-Way

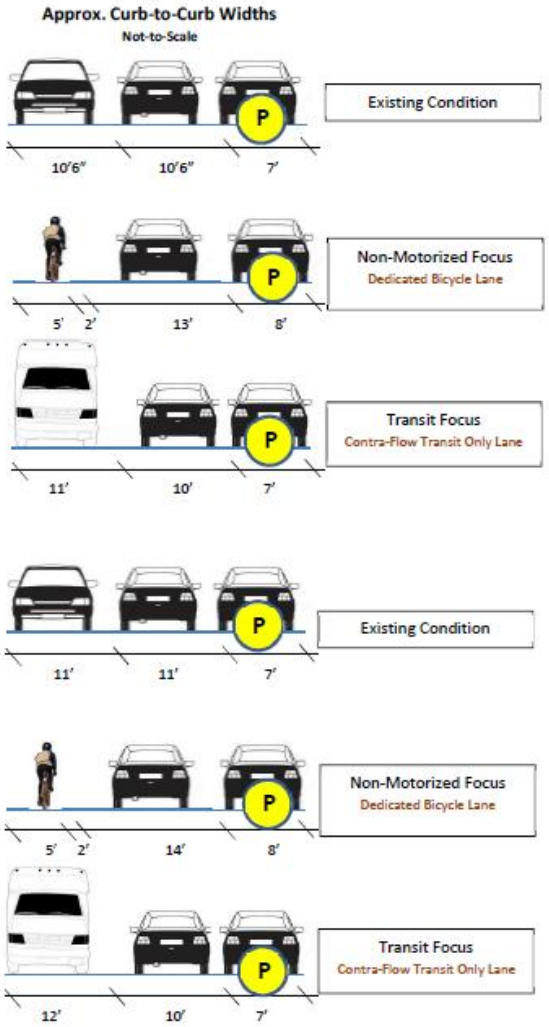


Basic Feasibility Screening

Improvement Package # 3

Improvement Package # 3 – Counter-Clockwise One-Way Loop





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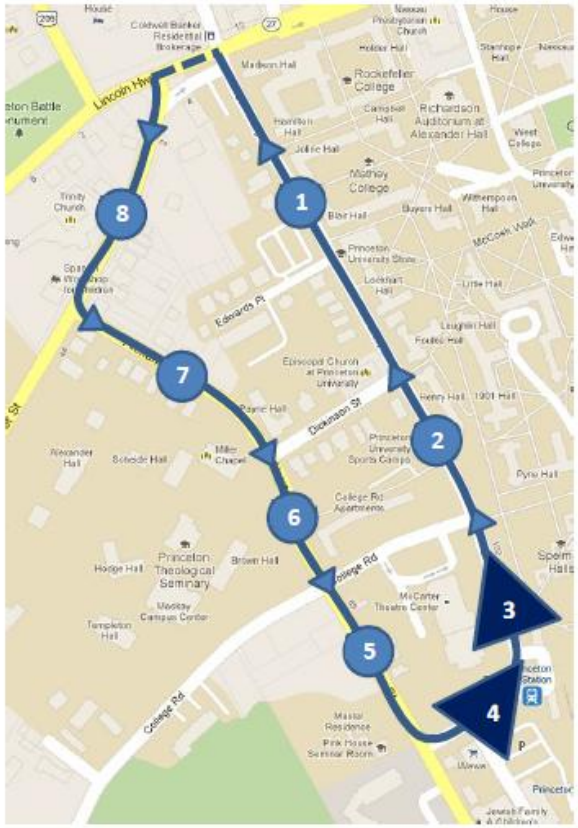
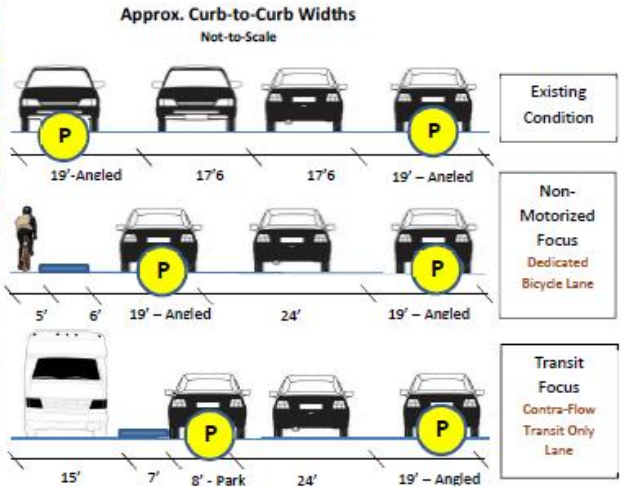
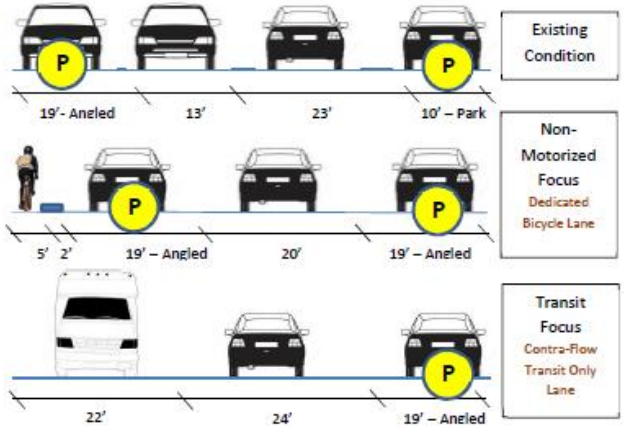
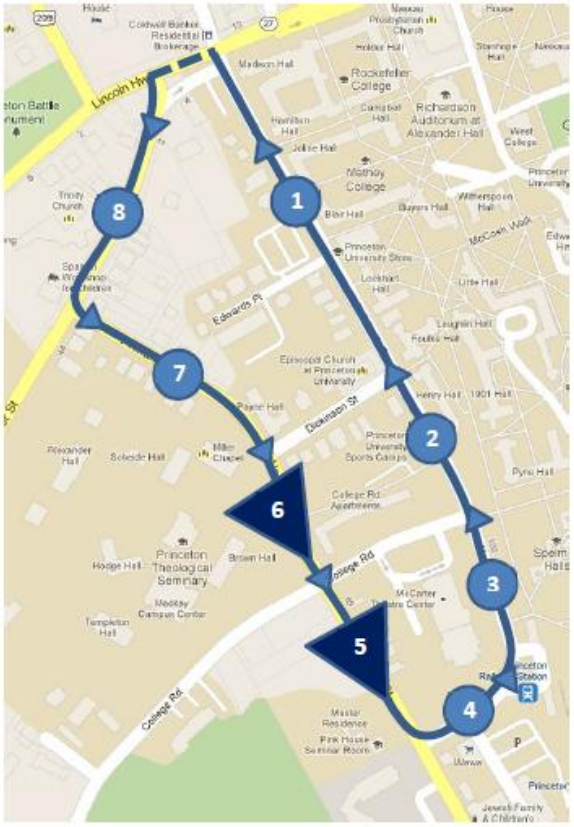
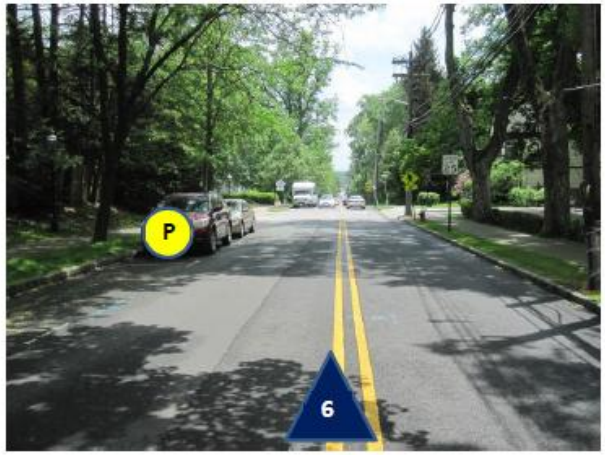


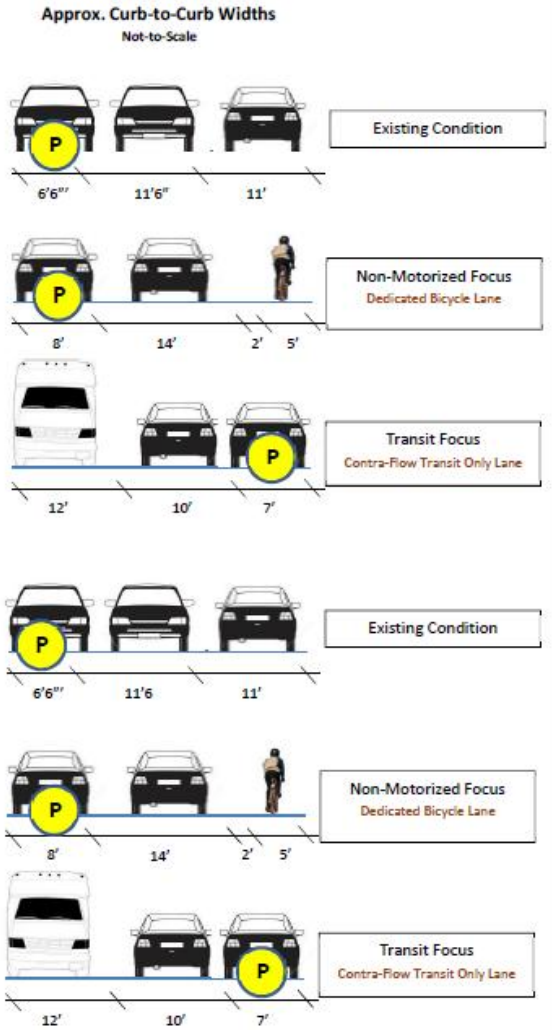




Improvement Package # 3 – Counter-Clockwise One-Way Loop







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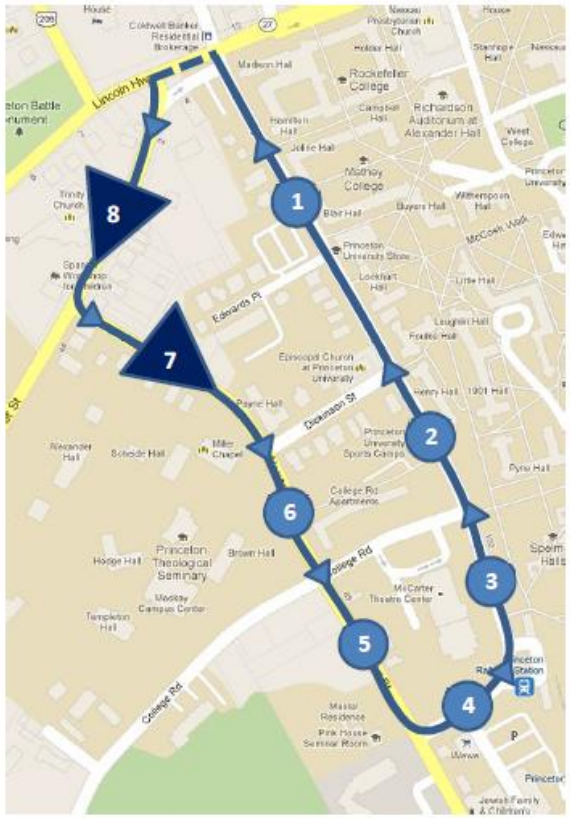
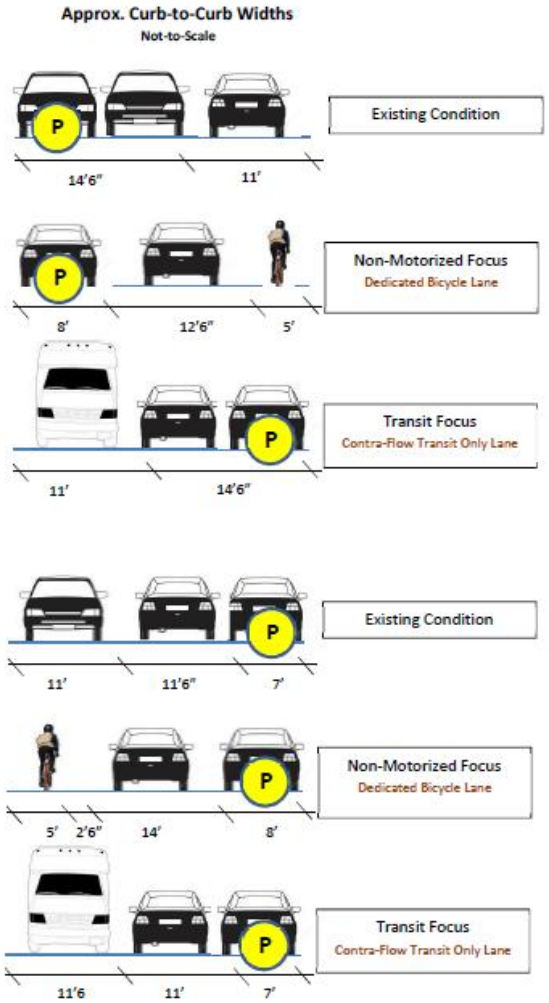
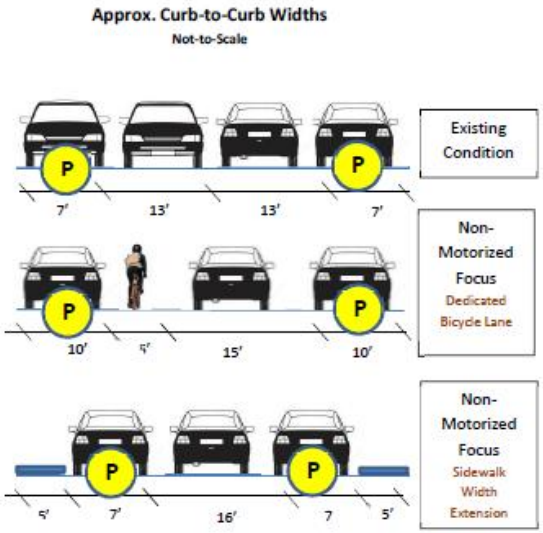




Improvement Package # 3 – Northbound One-Way



Basic Feasibility Screening

Improvement Package # 4

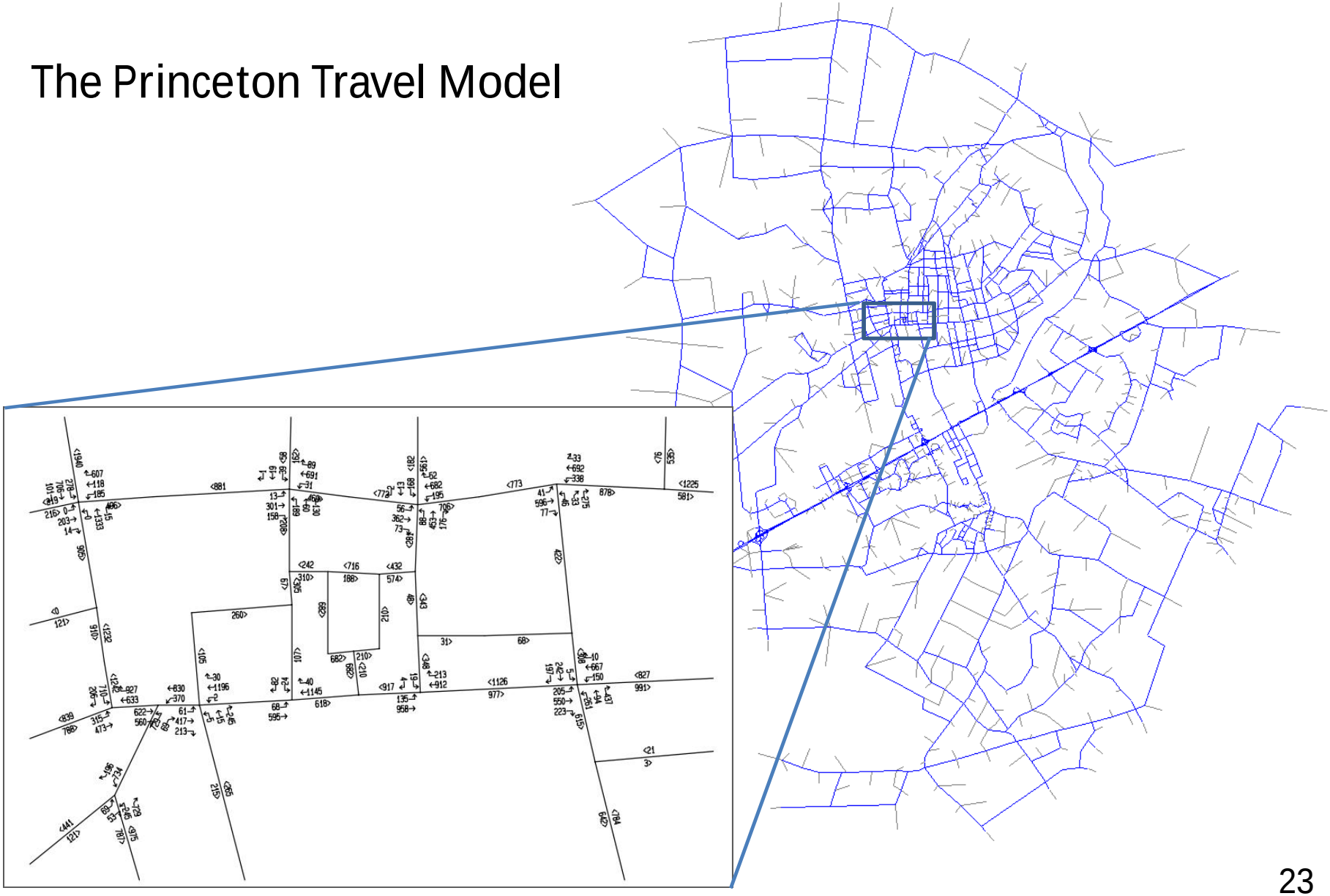
Note: This Package is same as the Improvement Package # 2 except that Witherspoon Street will continue to operate as a two-way street. This Package was put together to determine stand-alone impacts of clockwise one-way loop operation on Alexander St., University Pl. and Mercer St.

Preliminary Traffic Modeling Findings

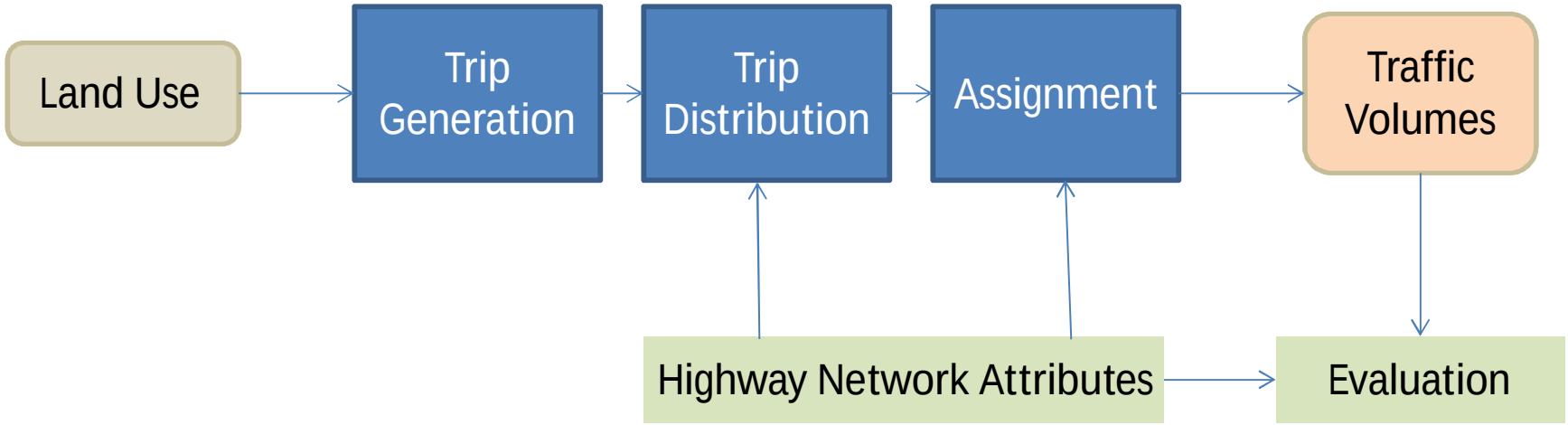
The Princeton Travel Model

- Covers Princeton, West Windsor, portions of Plainsboro and Montgomery
- Comprehensive land use and development inventory maintained on an ongoing basis
- Applications include:
  - Roadway assessments (Princeton and West Windsor)
  - NJDOT Penns Neck planning
  - West Windsor / Princeton Junction planning

The Princeton Travel Model

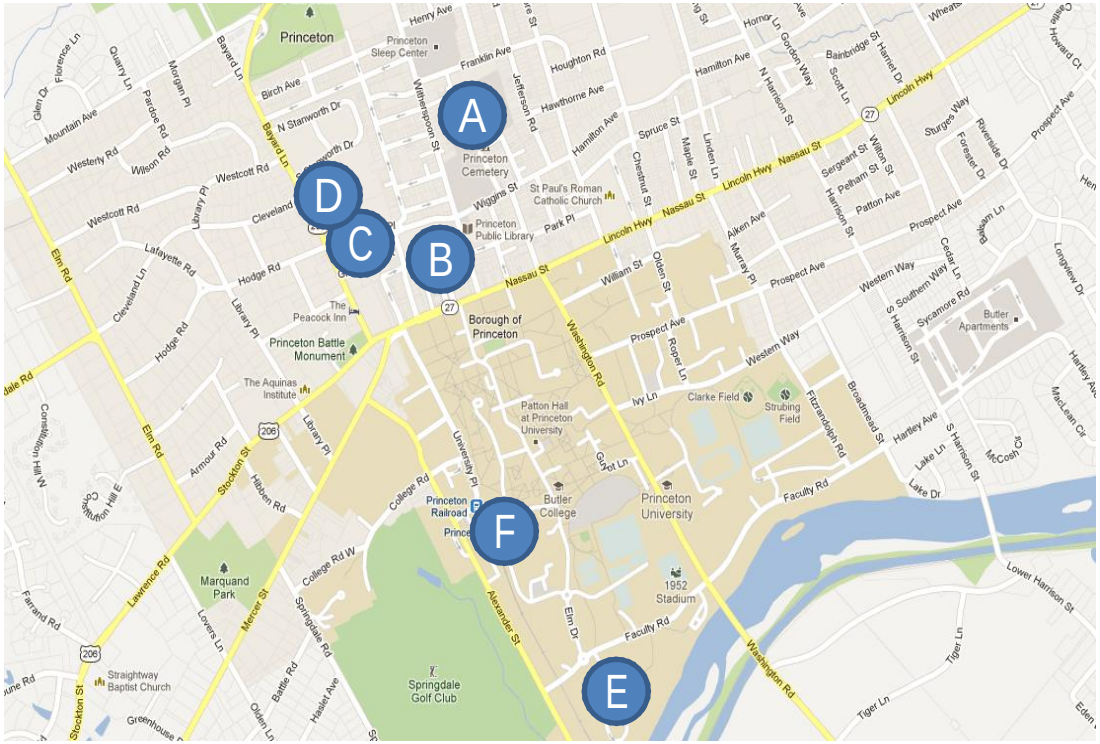


The Traffic Modeling Process



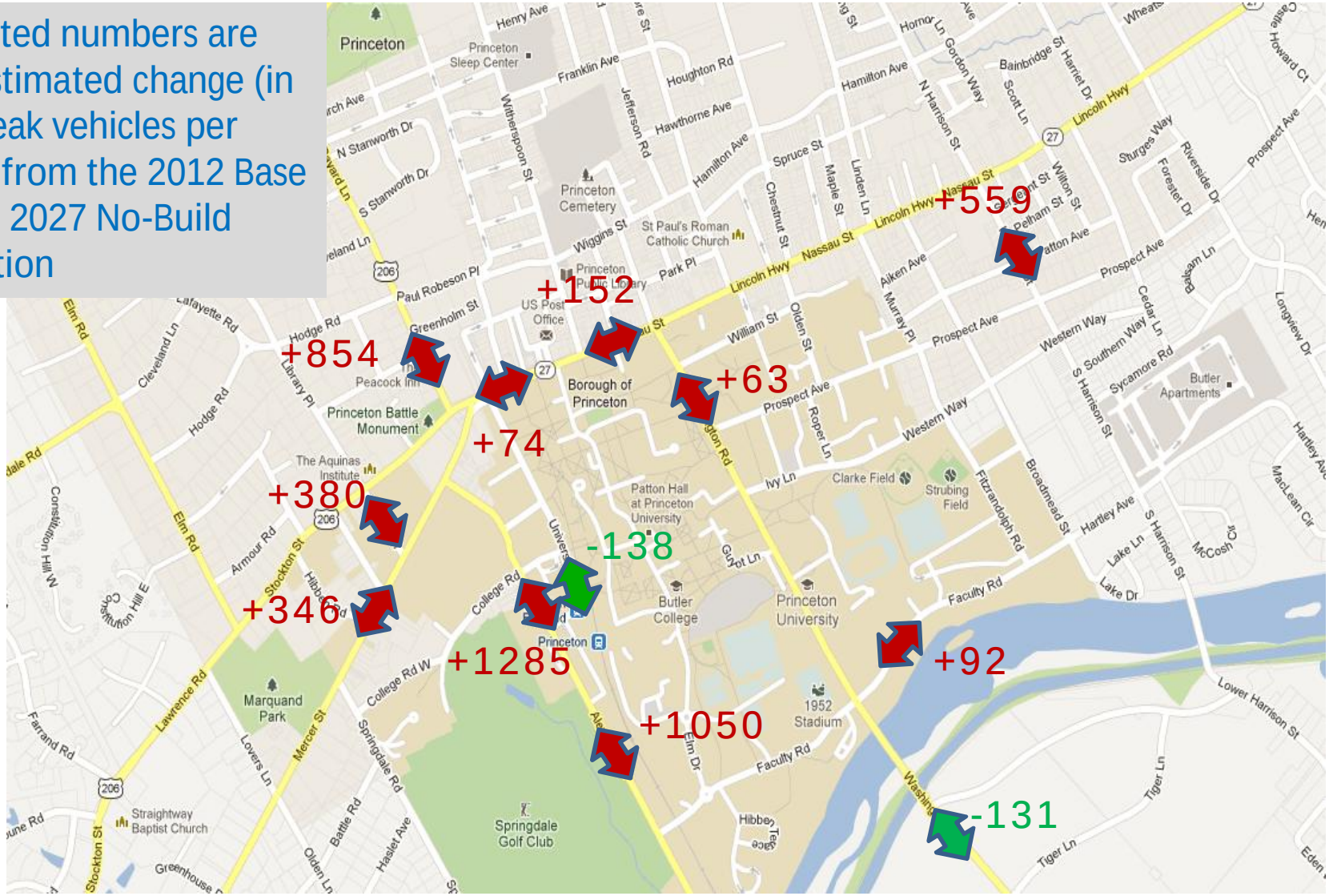
Development Assumptions

- Specific developments within Princeton:
  - A University Med Center redevelopment (280 du)
  - B Hullfish North (97 du)
  - C YM/YWCA redevelopment (150 du assumed)
  - D Merwick Stanworth (326 du)
  - E Hibben Magie (329 du)
  - F University Arts & Transit (mixed uses)
- West Windsor developments
- General background growth



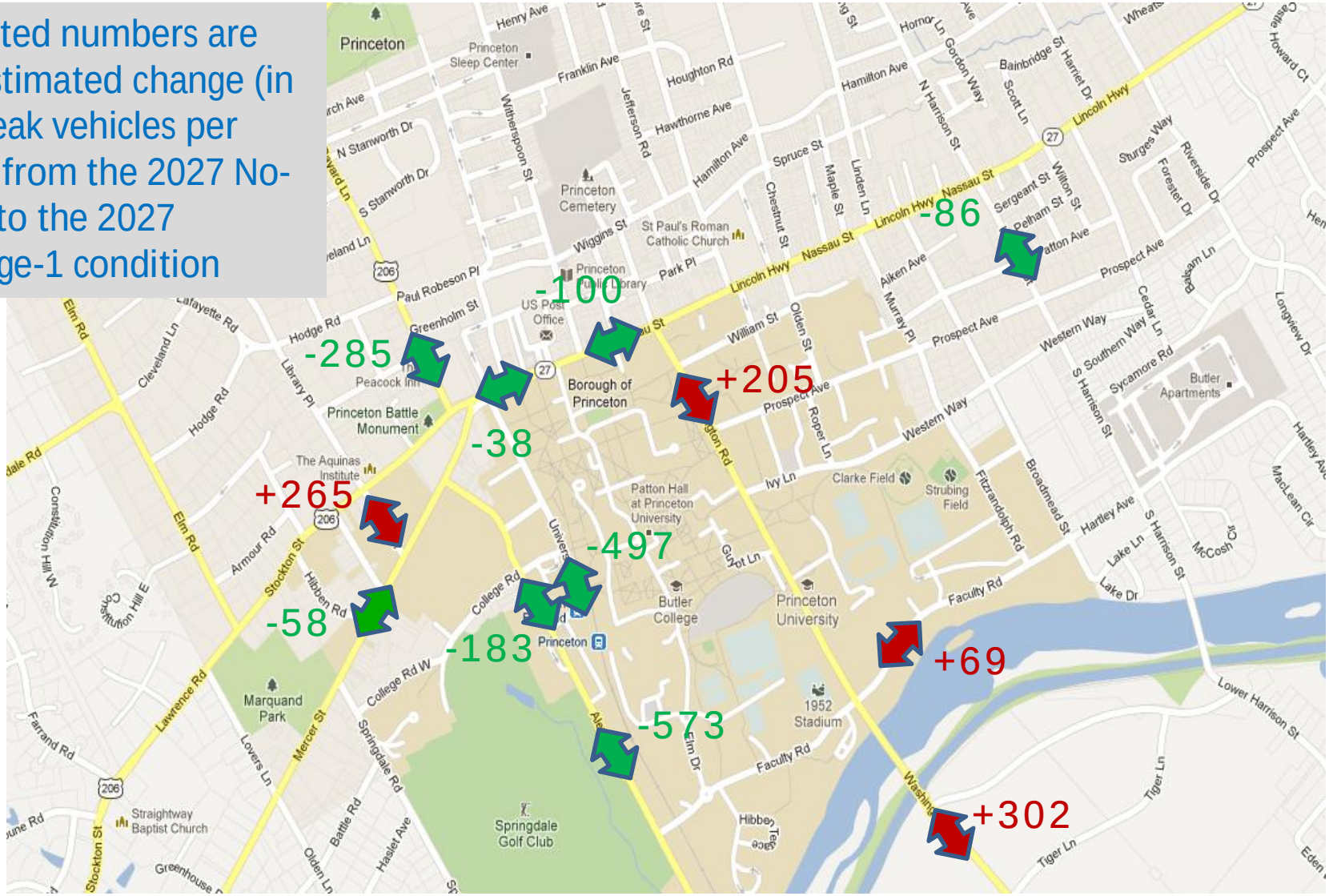
TRAFFIC VOLUME CHANGE: Existing to No-Build

Indicated numbers are the estimated change (in PM peak vehicles per hour) from the 2012 Base to the 2027 No-Build condition

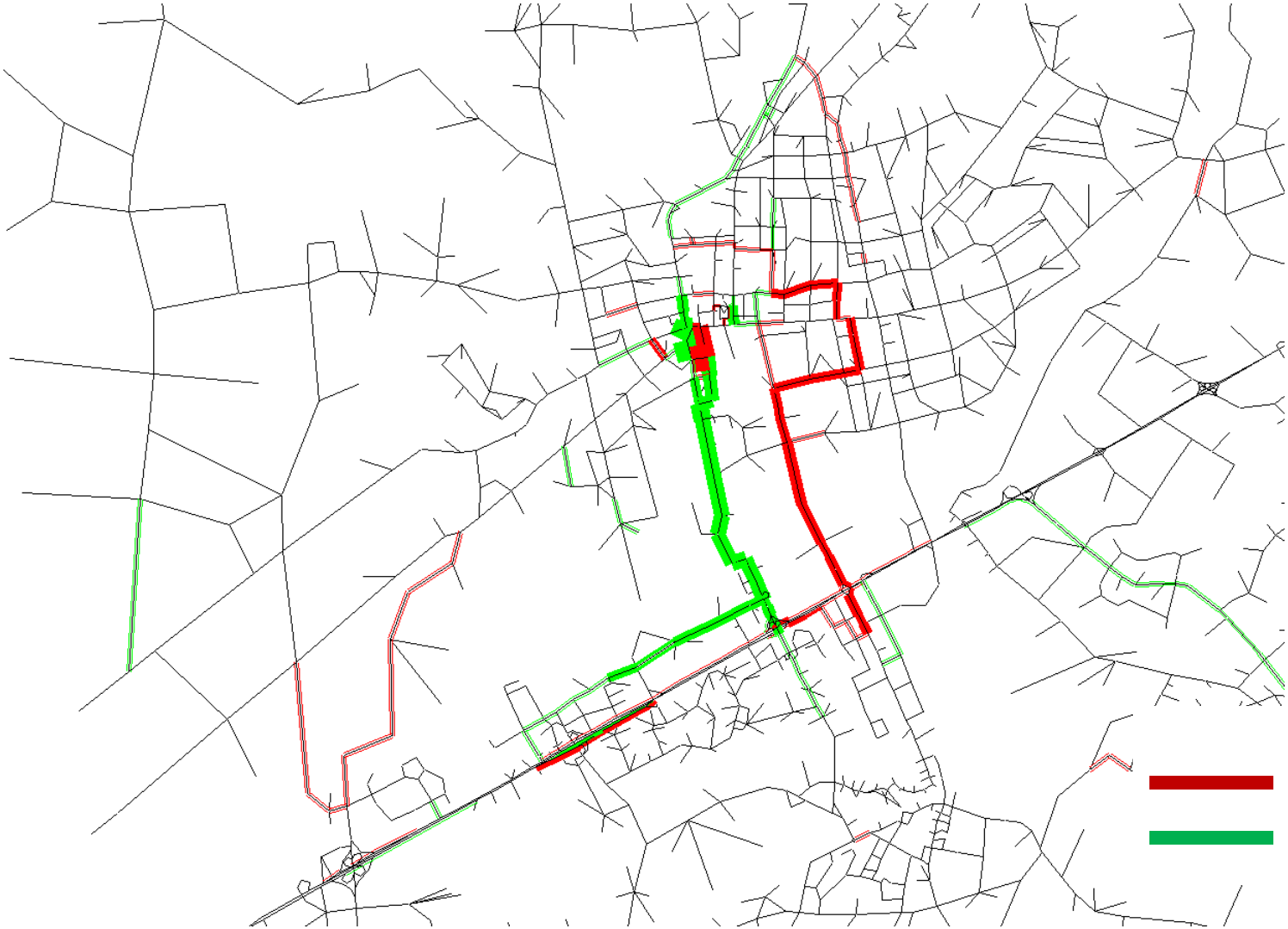


TRAFFIC VOLUME CHANGE: No-Build to Package 1

Indicated numbers are the estimated change (in PM peak vehicles per hour) from the 2027 No-Build to the 2027 Package-1 condition



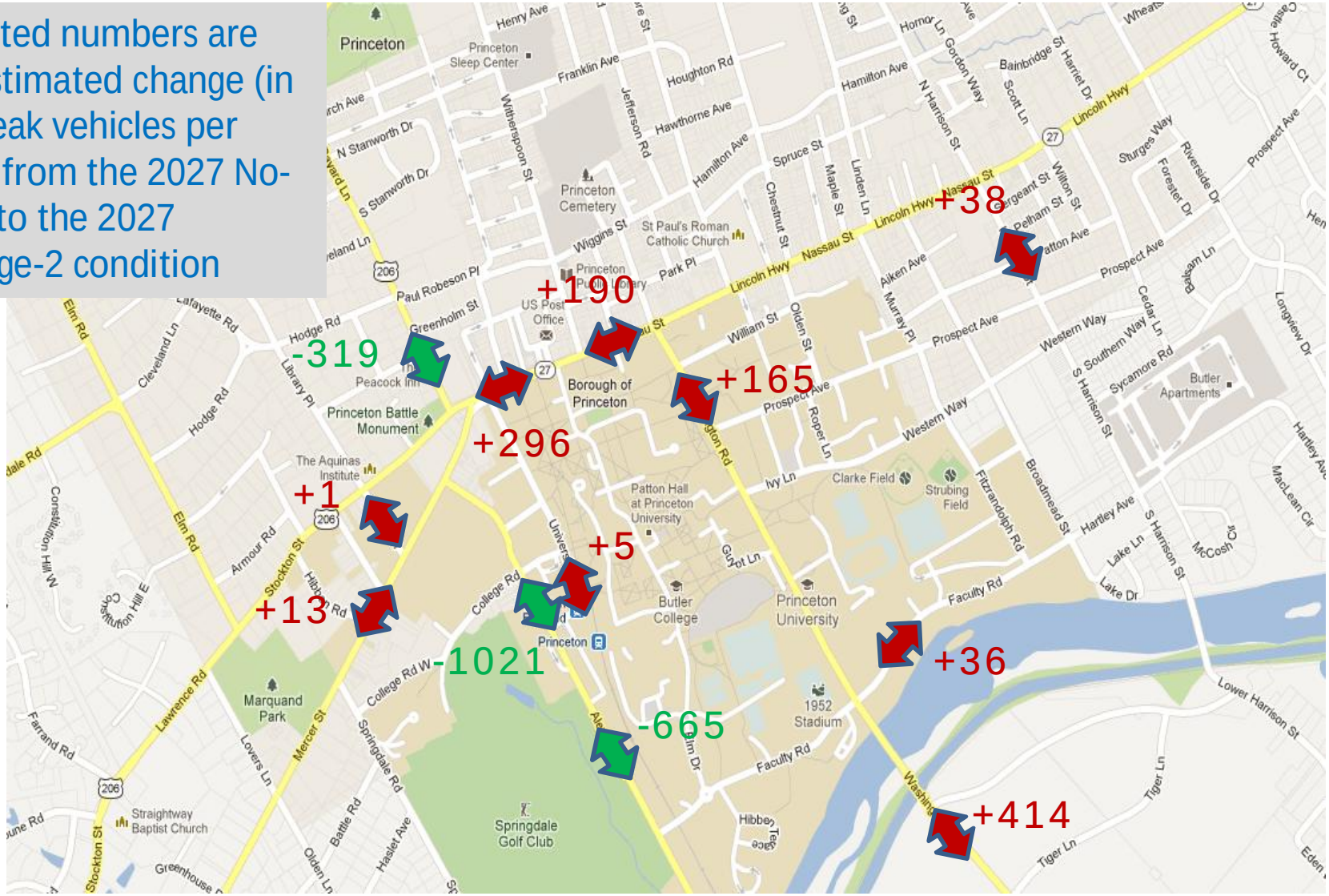
TRAFFIC VOLUME CHANGE: No-Build to Package 1



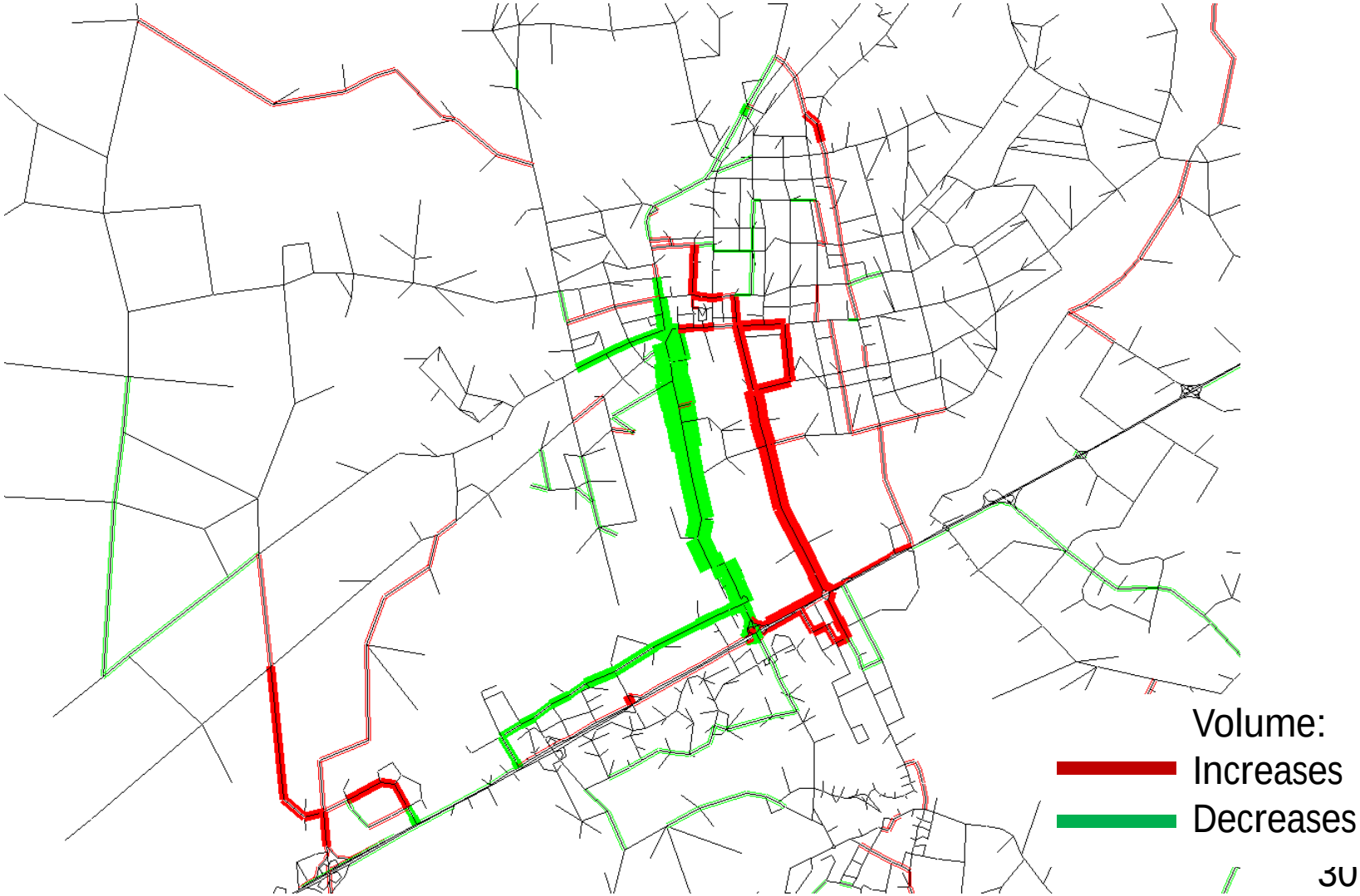
Volume:
Increases
Decreases

TRAFFIC VOLUME CHANGE: No-Build to Package 2

Indicated numbers are the estimated change (in PM peak vehicles per hour) from the 2027 No-Build to the 2027 Package-2 condition

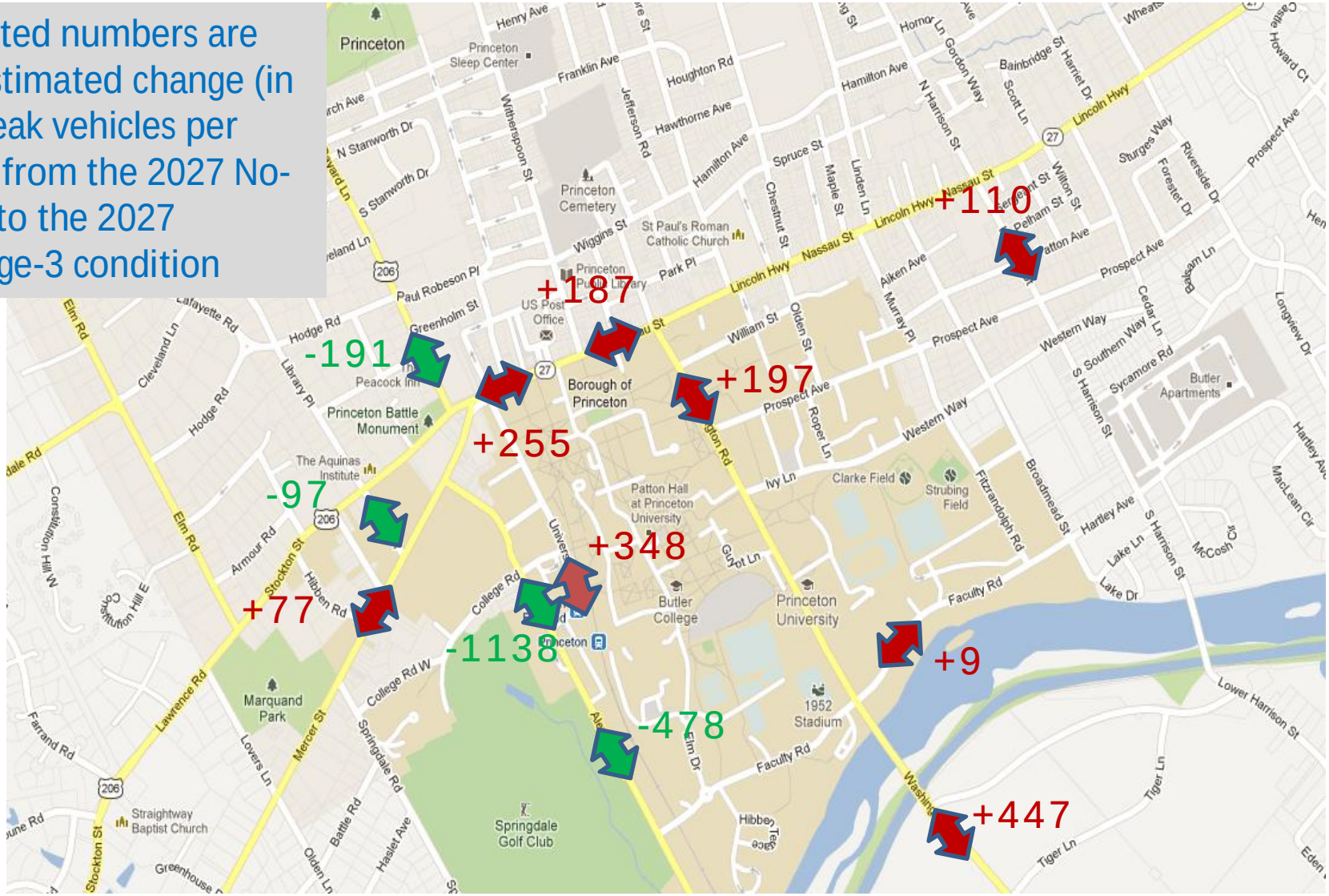


TRAFFIC VOLUME CHANGE: No-Build to Package 2

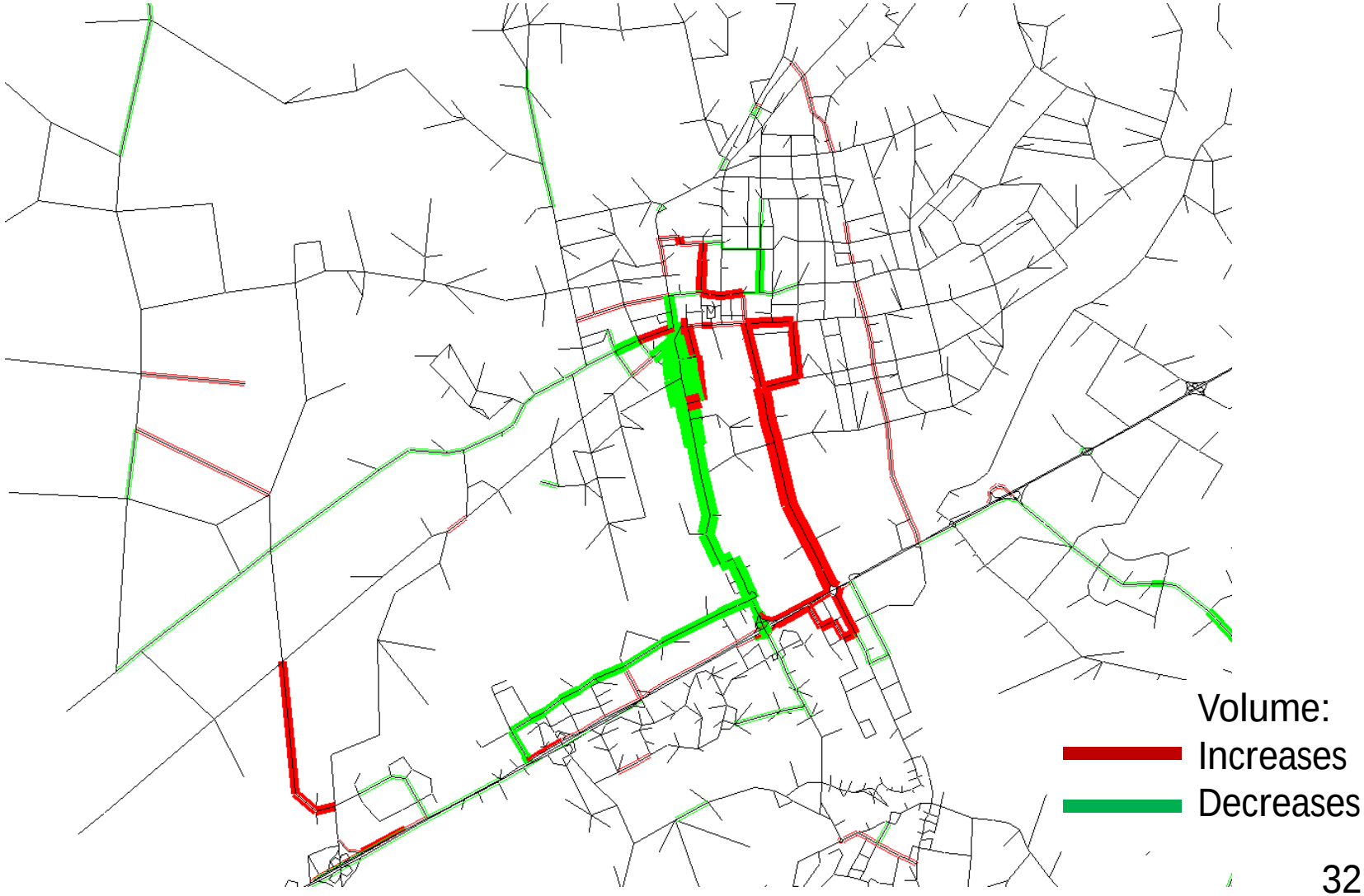


TRAFFIC VOLUME CHANGE: No-Build to Package 3

Indicated numbers are the estimated change (in PM peak vehicles per hour) from the 2027 No-Build to the 2027 Package-3 condition

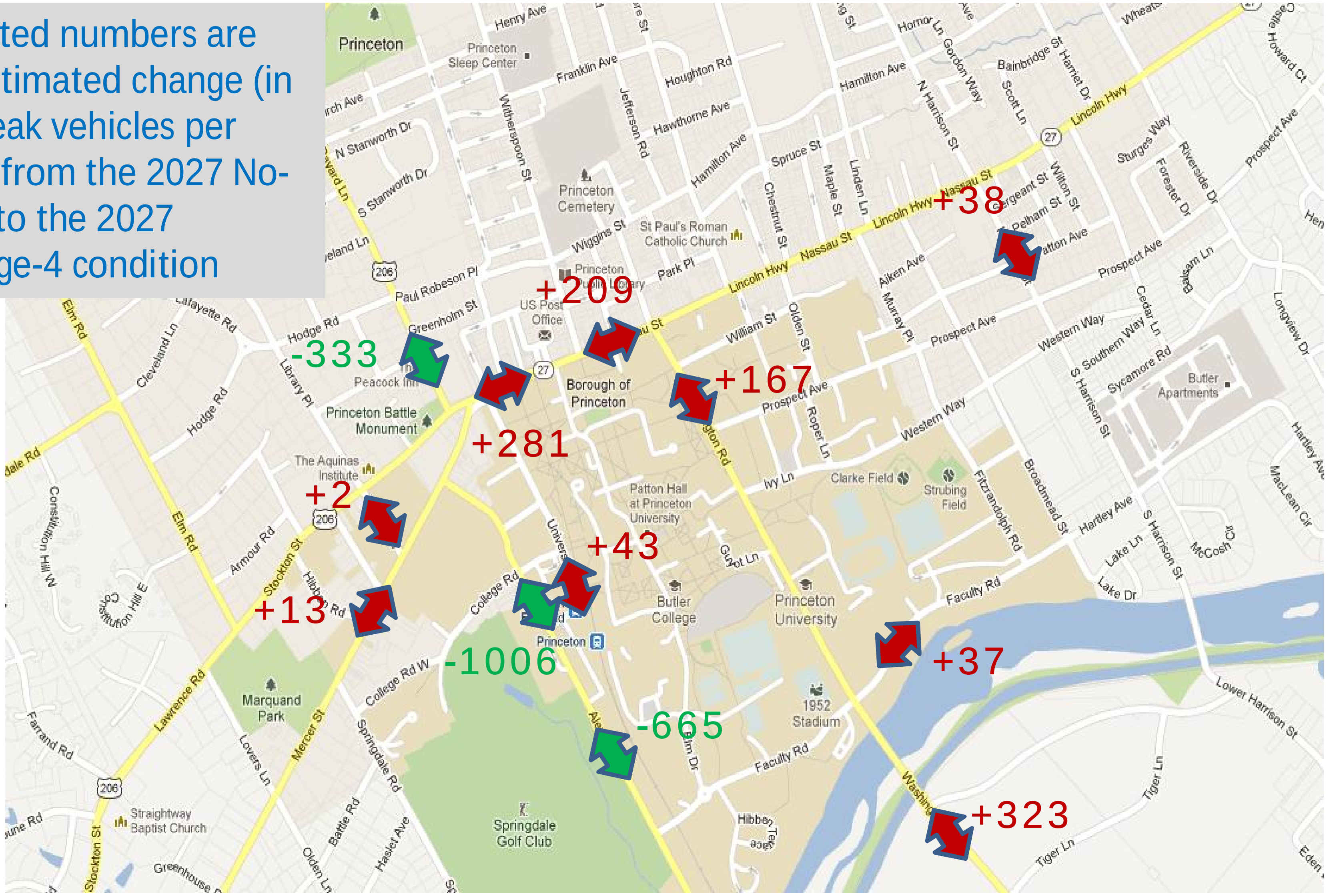


TRAFFIC VOLUME CHANGE: No-Build to Package 3

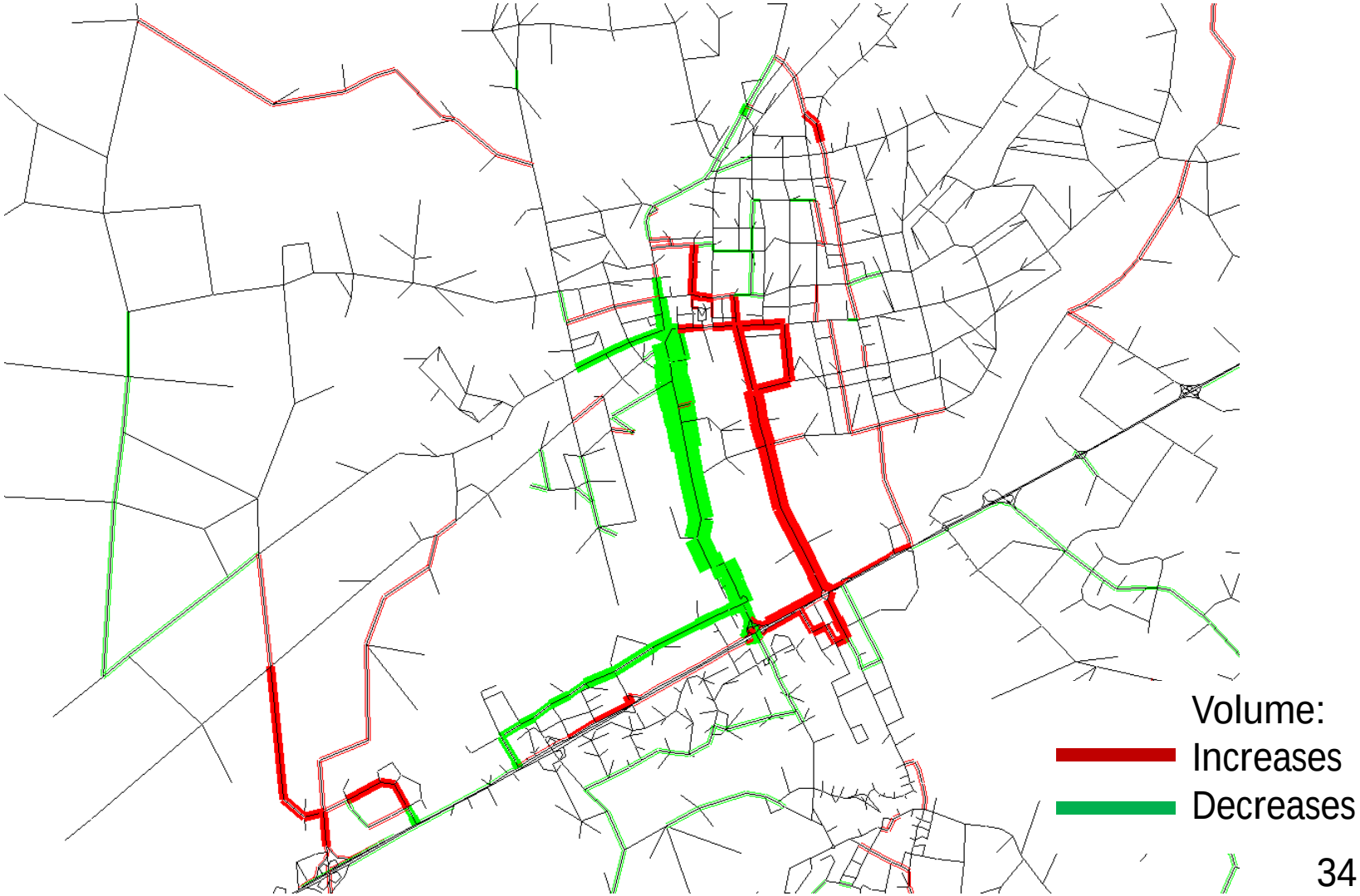


TRAFFIC VOLUME CHANGE: No-Build to Package 4

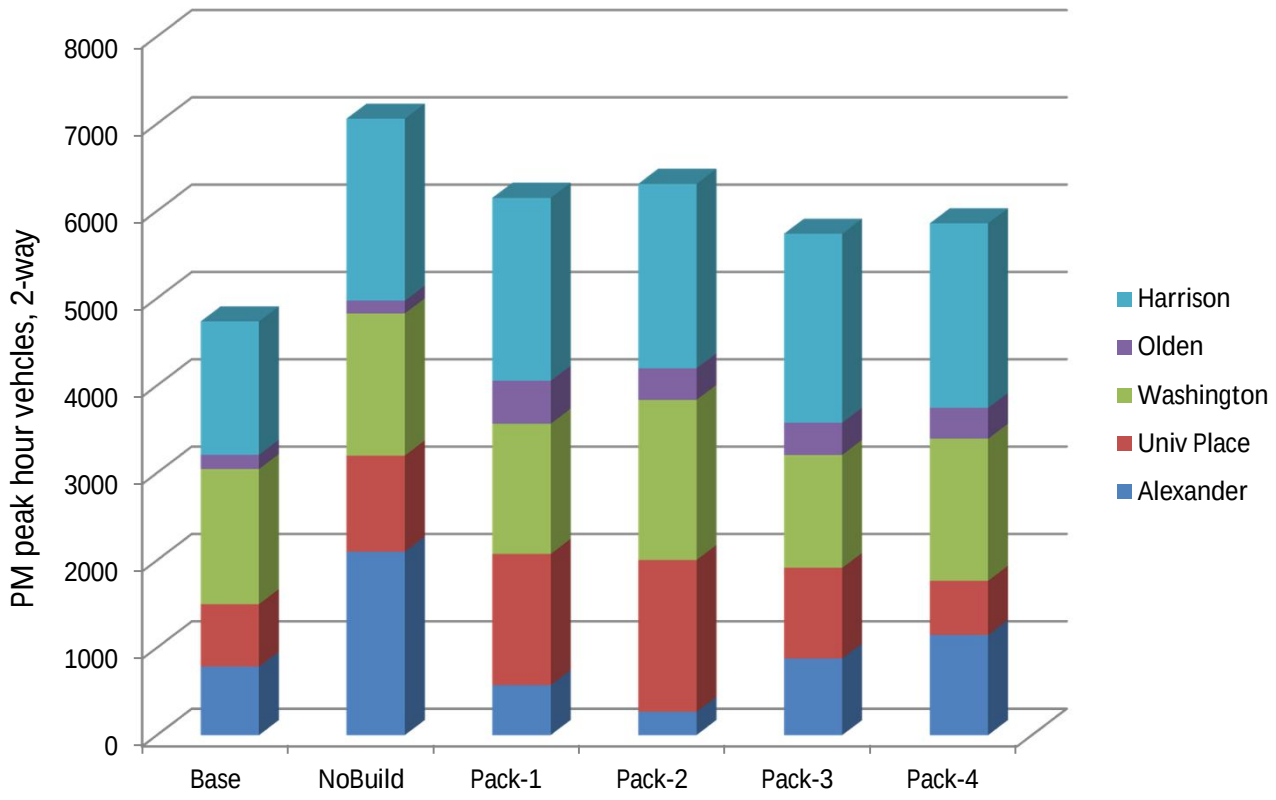
Indicated numbers are the estimated change (in PM peak vehicles per hour) from the 2027 No-Build to the 2027 Package-4 condition



TRAFFIC VOLUME CHANGE: No-Build to Package 4



Traffic Volume* on North/South Streets at Nassau Street



* PM peak hour vehicles, 2-way

Key Observations – Travel Demand

- Forecast peak hour traffic growth is likely to be concentrated along the Alexander Street corridor
  - (2012 Exiting to 2027 No-Build comparison)
- Proposed improvement packages will redistribute future traffic from the Alexander Street corridor to other access corridors,
  - Thereby relieving pressure on the Alexander Street corridor
  - (2027 No-Build to Package 1/2/3/4 comparison)
- Witherspoon Street closure between Nassau St. and Spring St. will not have significant impact on traffic circulation
  - (Package 2 and Package 4 comparison)

Key Observations – Travel Demand

- All improvement packages have more or less similar impacts on traffic volume redistribution

- Selection of one-way direction of travel will have localized implications
  - Clockwise one-way loop will involve all right turn movements along the loop
  - Will significantly improve traffic operation along Nassau Street between Bayard Lane and University Place
    - Eliminating several left turns
    - Possibly eliminating the traffic signal at University Pl.
  - Counter-clockwise one-way loop may result in better operation of the proposed roundabout at University Pl. and Alexander St. intersection

- One-way systems lack redundancy
  - Existing: Two streets, two lanes in each direction
  - Proposed: One street, one lane in each direction
  - Forces vehicle / pedestrian conflicts at McCarter Theatre

Key Opportunities

In addition to streamlining traffic operation in the core of Princeton Township, the improvement packages offer key opportunities:

- One-way loop along Alexander Street, Mercer Street and University Place (in either direction) can create multimodal opportunities for non-motorized modes by freeing pavement space

- Improvement packages can allow a dedicated transit lane
  - Can support the Princeton Transit Study recommendations

- Strategic street closures can augment place making initiatives
  - Pedestrian plazas
  - Pedestrian-friendly town center

Discussion/Questions